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CONTENTS:

A Century of Additions to the Flora of Virginia (continued). *M. L. Fernald.* 419

Interesting Plants of Oklahoma. *U. T. Waterfall.* 499

Rehder's Manual (Review). *M. L. F.* 502

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THE NEW ENGLAND BOTANICAL CLUB

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A CENTURY OF ADDITIONS TO THE FLORA OF VIRGINIA

M. L. Fernald

(*Continued from page 416*)

*Cyperus rivularis Kunth, forma elutus (C. B. Clarke) Kükenth. James City County: tidal marsh along Powhatan Creek, north of Jamestown Island, no. 10,946; similar habitat, Gordon Creek, east of Barrat's Bridge (or Ferry), no. 11,260.

Apparently all the plants of tidal estuaries from southern Maine southward belong to forma *elutus*, with nearly colorless scales. The type of var. *elutus* C. B. Clarke, was from Pennsylvania, without designation of locality. In the tidal marshes the form becomes very tall (up to 6 dm. high). See p. 394.

C. haspan L., var. americanus Boeckeler. Tidal estuaries of the James and the Chickahominy and tributary creeks inland to Charles City and New Kent Counties, also tidal marshes of Back Bay (many nos.). See pp. 376 and 386 and map 9.

American variety of a pantropical type, reaching essentially equivalent latitudes north and south of the Equator in North and South America.

C. globulosus Aublet.

This adventive species, rapidly spreading as a weed, often forms dense carpets in dooryards, where, mowed at frequent intervals, it maintains a good, green carpet through the midsummer heat. It thus becomes an uninvited "lawn grass" of some value.

*C. brevifolius (Rottb.) Haussk. (*Kyllinga brevifolia* Rottb.). James City County: fresh tidal marsh of Chicka-

hominy River, below Barrat's Bridge (or Ferry), no. 11,266. See p. 395 and MAP 21.

First known area north of Georgia, except that on the lower Delaware. Like *Cyperus haspan* (see above), *C. brevifolius* is a pantropical type, with dispersal which suggests great antiquity, although in some areas it is evidently a recent adventive; and, like *C. haspan* var. *americanus*, its eastern American limits north and south of the Equator are in equivalent latitudes.

ELEOCHARIS TENUIS (Willd.) Schultes, var. VERRUCOSA Svenson. To the station in Dinwiddie County, recorded in 1938, add one in GREENSVILLE COUNTY: peaty swale by Southern Railway, northeast of Emporia, no. 10,137. See p. 360.

DICHROMENA COLORATA (L.) Hitchc. To the station recorded in RHODORA, xxxix. 396, add another, also in PRINCESS ANNE COUNTY: inner border of brackish to fresh marsh along Back Bay, at eastern margin of Long Island, no. 10,539. See pp. 370 and 371.

PSILOCARYA SCIRPOIDES Torr., var. GRIMESII Fern. & Grisc. in RHODORA, xxxvii. 154, pl. 344 (1935). To the two original stations add a fine one in NANSEMOND COUNTY: seepy sandy and peaty open spots in sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 11,530. See p. 384.

BULBOSTYLIS CILIATIFOLIUS (Ell.) Fernald in RHODORA, xl. 391 (1938). Local range extended northward in Southampton County and eastward into Nansemond County (many nos.). See pp. 362 and 379.

SCIRPUS DEBILIS Pursh. DINWIDDIE COUNTY: springy sphagnous swale about 5 miles east of Burgess Station, no. 10,970.

South of the Potomac chiefly a plant of the interior of the State. We have met it nowhere else on the Coastal Plain. See p. 390.

S. ATROVIRENS Muhl., var. FLACCIDIFOLIUS Fern. in RHODORA, xl. 396 (1938). Range extended into GREENSVILLE COUNTY: wooded bottomland of Fontaine Creek southeast of Taylor's Millpond, nos. 10,140, 10,544. SUSSEX COUNTY: bottomland swamp, Nottoway River, southwest of Homeville, no. 10,141. See p. 359.

By mid-July the over-lopping and drowned inflorescences freely proliferate in the manner of the two following.

S. DIVARICATUS Ell. Local range extended eastward into NANSEMOND COUNTY: border of gum swamp at margin of Great Dismal Swamp, southeast of Whitemarsh School, no. 11,532, old culms prostrate, freely proliferating and rooting at nodes. See p. 400.

S. FONTINALIS Harper, var. VIRGINIANA Fern. in RHODORA, xli. 532 (1939). Range extended northward across the James to JAMES CITY COUNTY: swampy woods along Powhatan Creek, north of Jamestown Island, no. 10,974, old culms arching and trailing, the inflorescences producing many rooting young plants. See p. 386.

ERIOPHORUM VIRGINICUM L. DINWIDDIE COUNTY: springy sphagnous swale about 5 miles east of Burgess Station, no. 10,975. PRINCESS ANNE COUNTY: swampy and inundated woods, north of Blackwater River, no. 3779.

It is not known where Clayton got his material, cited by Gronovius and by Linnaeus, nor the exact geographic source of the plant said to be from Virginia, described and illustrated by Plukenet. The species is frequent along the Blue Ridge and the Appalachian Upland but we have only twice met it on the Coastal Plain, although Britton & Hollick collected it in late September, 1890, in the Great Dismal Swamp in Nansemond County, along "the old canal" from Suffolk, where "masses of *Eriophorum Virginicum* were frequent."—Hollick in Mem. Torr. Bot. Cl. ii. 56 (1890). See p. 390.

*FUIRENA BREVISETA Coville. DINWIDDIE COUNTY: springy sphagnous swale about 5 miles east of Burgess Station, no. 10,976.

Extension north from North Carolina. See p. 390.

*RHYNCHOSPORA MACROSTACHYA Torr., var. **colpophila** Fernald & Gale, var. nov., planta 0.8–1.75 m. alta; foliis valde elongatis subflaccidis; achaeniis 3–3.8 mm. latis 5–5.8 mm. longis; tuberculis 1.8–2.3 mm. longis basi 1.8–2.4 mm. latis.—Tidal marshes of the Chesapeake Bay drainage, Maryland and Virginia. MARYLAND: very rare, swamps near Marshall Hall, September 28, 1898, *Th. Holm;* Chesapeake Beach Railroad at Patuxent River, August 27, 1902, *Geo. H. Shull*, no. 283. VIRGINIA: Fairfax County: low wet woods, near Accotink Bay, Camp Humphreys, October 12, 1924, *S. F. Blake*, no. 8915. King William County: fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, October 14 and 16, 1939, *Fernald & Long*, no. 11,536. New Kent County: fresh tidal marsh by Chickahominy River, at "Shady Rest", southeast of Windsor Shades (Boulevard Postoffice), September 16, 1939, *Fernald & Long*, no. 11,273; open marsh of Chickahominy River, Lanexa, July 30, 1921, *Grimes*, no. 4155. Charles City County: fresh tidal marsh along Kittewan Creek, Weyanoke, September 18, 1939, *Fernald & Long*, no. 11,274. James City County: muddy tidal marsh along Gordon Creek, east of Barrat's Bridge (or Ferry), September 19, 1939, *Fernald & Long*, no. 11,275; tidal

marsh along Powhatan Creek, north of Jamestown Island, August 22, 1939, *Fernald & Long*, no. 10,977. Prince George County: muddy tidal shore of James River, Jordan Point, August 16, 1938, *Fernald & Long*, no. 8983 (TYPE in Herb. Gray). See pp. 386, 393 and 401.

As noted by me in RHODORA, xli. 533 (1939), *Rhynchospora macrostachya* is known on the Coastal Plain of Virginia only from the acid Great Dismal Swamp and from the tidal estuaries entering Chesapeake Bay. The plant of the tidal shores is extraordinarily large, with prolonged and almost flaccid leaves. Miss Shirley Gale, engaged in an intensive study of the genus, has made measurements which give the following contrasts.

Typical RHYNCHOSPORA MACROSTACHYA: plant 4.5 (in dwarf specimens down to 1)–11.3 dm. high, in the Southeast becoming taller; leaves firm, 0.35–1.2 cm. broad; achene 5–5.4 mm. long, 2.6–3.1 mm. broad; tubercle 1.7–2 (rarely –2.2) cm. long, 1–1.8 mm. broad at base.

Var. COLPOPHILA: plant 0.8–1.75 m. high; leaves very long, subflaccid, 0.9–1.5 cm. broad; achene 5–5.8 mm. long, 3–3.8 mm. broad; tubercle 1.8–2.3 cm. long, 1.8–2.4 mm. broad at base.

Var. *colpophila* is a member of the remarkable flora which characterizes the tidal reaches of the Chesapeake, a group of endemic and isolated species specially discussed in Part III.

THE VARIETIES OF RHYNCHOSPORA CEPHALANTHA.—In 1935 I pointed out[12] that the type of *Schoenus axillaris* Lam. (1791), which is the nomenclatural basis of *Rhynchospora axillaris* (Lam.) Britton (1888), can have nothing to do with the plant with subspherical glomerules to which Britton had applied it. I then showed that the first clearly identifiable binomial in this series is *R. cephalantha* Gray in Ann. Lyc. N. Y. iii. 218 (1835); and I took up *R. cephalantha* in the inclusive sense of Gray and recognized *R. microcephala* Britton as a species on account of more numerous and more remote and smaller glomerules of smaller spikelets with smaller achenes with more slender tubercle.

During the summer and autumn of 1938 and again in 1939 Mr. Long and I were much perplexed by the series, for it was noted that in bogs where deep sphagnum prevails plants very close to typical New Jersey *R. cephalantha* occur, but that in inundated pinelands and shallow pools there is a much coarser plant, with achenes and spikelets of *R. cephalantha*, the glomer-

[12] Fernald in RHODORA, xxxvii. 403–405, plate 391 (1935).

ules tending to be very numerous and remote and the broad leaves remaining flat, whereas typical *R. cephalantha* has the narrow leaves soon becoming involute and the few glomerules less scattered. Miss Shirley Gale has joined me in a detailed study of the series and we are recognizing two well defined varieties of *R. cephalantha*. See p. 366.

*R. CEPHALANTHA Gray, var. **typica** Fernald & Gale. *R. cephalantha* Gray in Ann. Lyc. N. Y. iii. 218, as to plant of Torrey from New Jersey and Long Island (1835); Torrey, Fl. N. Y. ii. 365 (1843); Gray, Man. 533 (1848); Fernald in RHODORA, xxxvii. 404, pl. 391, figs. 2 and 3 (1935). *R. axillaris* Britton in Bull. Torr. Bot. Cl. xv. 104 (1888) as to plant, in part, not as to name-bringing synonym, *Schoenus axillaris* Lam.—Culms 5.7–9 dm. high; leaves 1.5–2.5 (–3) mm. broad, tending to become strongly inrolled in drying; glomerules chiefly confined to the summit or the upper fifth of the culm, terminal or in 1 or 2 (rarely 3) upper axils, the lowest then 2–10 (–15) cm. apart; mature glomerules 1.5–2 cm. in diameter; spikelets castaneous to blackish-fuscous, 5–6 mm. long; achenes 2–2.4 mm. long, 1.4–1.6 mm. broad; tubercle 1.8–2.4 mm. long; bristles 3.8–4.8 mm. long.—Wet pine barrens and bogs, Long Island, New Jersey and Delaware; southeastern Virginia, eastern North Carolina and southeastern South Carolina. The following are the more southern specimens. VIRGINIA: argillaceous and siliceous boggy depression southeast of Petersburg, at head of Poo Run, Prince George County, June 19, 1936, *Fernald, Long & Smart,* no. 5661, with scattered glomerules (as *R. microcephala*), July 18, 1936, *Fernald & Long,* no. 6090 (distributed as *R. microcephala*); sphagnous argillaceous boggy depression just northwest of Wakefield, Sussex County, September 11, 1937, *Fernald & Long,* no. 7352 (as *R. microcephala*); sphagnous bog about 1 mile northeast of Dahlia, Greensville County, July 15, 1938, *Fernald & Long,* no. 8610. August 20, 1938, *Fernald & Long,* no. 8993. NORTH CAROLINA: sphagnous bog at Method, Wake County, July 13, 1938, *R. K. Godfrey,* no. 4985 (transition to var. *pleiocephala* in its distant glomerules); drainage ditch at Carolina Beach, New Hanover County, June 24, 1938, *Godfrey,* no. 4719 (broad leaves of var. *pleiocephala*); savannah 12 miles north of Jacksonville, Onslow County, August 6, 1938, *Godfrey,* no. 5756: savannah 5 miles east of Jacksonville, Onslow County, August 6, 1938, *Godfrey,* no. 5808. SOUTH CAROLINA: grass-sedge bog or savannah, 12 miles north of Georgetown, Georgetown County, August 2, 1939, *Godfrey & Tryon,* nos. 752a, 1061; drainage ditch, 3 miles north of McClellanville, Charleston County, July 19, 1939, *Godfrey & Tryon,* no. 677.

Much of the material from southeastern Virginia has 3 or 4 remote glomerules, whereas 2 glomerules are more general in New Jersey. Plants with only 2 glomerules occur, however, in Virginia and exceptional New Jersey specimens show 1, 3 or 4.

*Var. **pleiocephala** Fernald & Gale, var. nov., culmis crassis 0.6–1.2 m. altis; foliis planis 2.5–4.5 mm. latis; inflorescentiis 1.4–5 dm. longis, glomerulis axillaribus 4–7 remotis 1.2–2 cm. diametro, imis 0.6–1.8 dm. distantibus; spiculis fulvis vel castaneis 5 mm. longis; achaeniis 2.1–2.5 mm. longis 1.4–1.6 mm. latis; tuberculis 1.4–2.2 mm. longis; setis 3–4.4 mm. longis.—Swamps, pond-holes, wet pinelands and ditches, southeastern Virginia to Florida and Louisiana. Virginia: abundant and dominating an exsiccated argillaceous pond-hole in woods, about 1 mile south of Mercy Seat Church, Surry County, August 23, 1938, *Fernald & Long,* no. 8994 (type in Herb. Gray), October 15, 1938, *Fernald & Long,* no. 9549: dominant in flat sphagnous pineland, Collier's Yard, 3–4 miles southwest of Petersburg, Dinwiddie County, July 16, 1939, *Fernald & Long,* no. 10,548; same station, August 17, 1939, *Smith & Hodgdon* in Pl. Exsic. Gray.; pond-hole in pine and oak woods near Three Creek, north of Emporia, Greensville County, September 9, 1938, *Fernald & Long,* no. 9283. North Carolina: pineland at Nakina, Columbus County, August 29, 1938, *R. K. Godfrey,* no. 6347; low pineland at Dunn, Harnett County, August 25, 1938, *Godfrey,* no. 6122; without stated locality (presumably near Wilmington), *M. A. Curtis;* ditches near Wilmington, July 2, 1897, *Biltmore Herb.,* no. 279[a]. South Carolina: Santee Canal, August, ——, *Ravenel* (as *R. cymosa*); sandy drainage ditch, 2 miles west of Salters, Williamsburg County, July 14, 1939, *Godfrey & Tryon,* no. 504; gum-swamp depression in savannah, 15 miles north of Georgetown, Georgetown County, June 24, 1939, *Godfrey & Tryon,* no. 62; grass-sedge bog or savannah, 12 miles north of Georgetown, August 2, 1939, *Godfrey & Tryon,* no. 752; shallow peaty pond in pine barren, 9 miles north of Georgetown, July 21, 1939, *Godfrey & Tryon,* no. 759; boggy ditch in pine barrens, 2 miles east of Meggett, Charleston County, July 16, 1927, *Wiegand & Manning,* no. 582 (as *R. axillaris*); drainage ditch, 3 miles north of McClellanville, Charleston County, July 19, 1939, *Godfrey & Tryon,* no. 675. Georgia: Waycross, August 18, 1909, *H. A. Lang* (Phil. Acad.); wet meadow, Leslie, Sumter County, August 17, 1900, *Harper,* no. 413 (as *R. axillaris*). Florida: low "rich" places, near Jacksonville, August ——, *Curtiss,* no. 3144; swampy places in pine barrens near Jacksonville, June 18, 1894, *Curtiss,* no. 5016 (as *R. axillaris*); cypress swamp, vicinity of Eustis, Lake County, May 16–31, 1894, *Nash,* no. 845 (as *R.*

axillaris); swamp, Okeechobee region, Brevard County, May 14, 1903, *Fredholm,* no. 5821 (as *R. fascicularis*); swamp on prairie, Okeechobee region, October 29, 1903, *Fredholm,* no. 6175 (as *R. axillaris*); bogs and shady swamps, Apalachicola, July–August, ——, Chapman in *Biltmore Herb.* no. 279[b]. Mississippi: tidal marsh on Bilox Bayou, Harrison County, September 17, 1885, *Donnell Smith;* Wisdom, June 14, 1897, *Tracy,* no. 3418 (as *R. axillaris*); moist open pine woods, 2 miles west of Bay St. Louis, Hancock County, June 25, 1938, *D. S. & H. B. Correll,* no. 9103. Louisiana: low moist grassy soil of open prairie, 3 miles east of Robert, Tangipahoa Parish, July 2, 1938, *D. S. & H. B. Correll,* no. 9317; open pine-land, north of Abita Springs, St. Tammany Parish, August 12, 1912, *Pennell,* no. 4137 (Phil. Acad.).

A single collection from New Jersey (Quaker Bridge, October 12, 1859, *Wm. Boott*) is as coarse as *R. cephalantha,* var. *pleiocephala* but its few glomerules place it nearer var. *typica. Godfrey,* no. 4985, from Wake County, and his no. 4719 from New Hanover County, North Carolina (see var. *typica*) are also transitional.

The coarse southeastern plant which we are calling *Rhynchospora cephalantha,* var. *pleiocephala* was recognized by Gray when he originally described *R. cephalantha;* and he gave the latter name rather than the original manuscript *R. biceps* of Torrey because of the southern specimens (from Wilmington, North Carolina, to Florida and Louisiana). The original material which Torrey had designated *R. biceps* and which formed the primary basis of *R. cephalantha* was the plant of the Pine Barrens of New Jersey (and of Babylon, Long Island); the coarser several-headed plant of the South was appended to it by Gray and caused his rejection of Torrey's name. Gray's comment was as follows:

> Obs. This interesting species was discovered by Prof. Torrey several years since, in the pine barrens of New Jersey and on Long Island; and as in these localities it occurs, for the most part, with only two heads, it received the name of *R. biceps.* Our specimens from the southern states, however, have uniformly more than two heads, and often six or seven. I have therefore ventured to substitute for the manuscript name of Prof. Torrey, one which is in a good degree characteristic of the species.

Later, however, in 1848, Gray (Man. 533) restricted the range of *R. cephalantha* to "Long Island and New Jersey." We are, therefore, maintaining this more slender extreme of the species as var. *typica.*

*Rhynchospora **chalarocephala** Fernald & Gale, sp. nov. (fig. 1 et 2), planta cespitosa, culmis gracilibus 1.8–8.3 dm. altis; foliis lineari-involutis 1– rare 2 mm. latis imis confertis; glomerulis 3–7 remotis turbinatis vel laxe subhemisphaericis plerumque 2–5-lobatis 0.9–1.8 cm. diametro; spiculis laxe adscendentibus vel explanatis; floribus solitariis; achaenio lenticulari-obovoideo laevi lucido 1.4–1.7 mm. longo 0.9–1 mm. lato marginato basi angustissime attenuato, tuberculo angusto subulato basi quam achaenii apicem valde angustiore 1–1.6 mm. longo; setis 6 retrorse barbellatis tuberculo aequalibus vel id leviter superantibus 2.8–3.8 mm. longis.—New Jersey to South Carolina. New Jersey: wet pine barrens, Sims Place, Burlington County, September 10, 1935, *J. A. Drushel & H. K. Svenson*, no. 6860 (as *R. glomerata*, var. *minor*); Atsion, Burlington County, September 21, 1895, *B. Heritage* (Phil. Acad.); Pleasant Mills, Burlington County, September 24, 1887, *C. A. Gross* (Phil. Acad.); peaty, sandy bank along West Branch of Wading R., Harrisville, Burlington County, July 21, 1932, *Fogg*, no. 4545 (Phil. Acad.); peaty bog, near Beaver Branch of Wading R., southwest of Calico, Burlington County, July 28, 1937, *Long*, no. 50,935 (Phil. Acad.); Parkdale, Camden County, August 17, 1905, *S. Brown*, no. 56 (Phil. Acad.), September 1, 1911, *Pennell*, no. 3570 (Phil. Acad.); peaty and sphagnous pond-hole depression near Hardingville, Gloucester County, August 8, 1935, *Long*, no. 47,134 (Phil. Acad.); Weymouth, Atlantic County, August 15, 1883, *C. A. Gross* (Phil. Acad.); Atlantic Cranberry Meadows, Weymouth, August 26, 1922, *G. W. Bassett* (Phil. Acad.); moist pine barrens, Egg Harbor City, Atlantic County, August 10, 1913, *Mackenzie*, no. 5558 (herb. N. Y. Bot. Gard.); Maurice River flats, east of Vineland, Cumberland County, August 12, 1923, *Bassett & Long* (Phil. Acad.); wet peaty margin of East Creek Pond, East Creek, Cape May County, September 25, 1920, *Long*, no. 23,461 (Phil. Acad.); wet peaty pond-hole about 1 mile west

Rynchospora chalarocephala: fig. 1, achene, × 10; fig. 2, summit of inflorescence, × 1.

R. microcephala: fig. 3, achene, × 10; fig. 4, summit of inflorescence, × 1.

of Bennett, Cape May County, September 26, 1920, *Long,* no. 23,488 (Phil. Acad.); moist sandy and peaty margin of pond-hole northwest of Ocean View, Cape May County, *Long,* no. 25,007 (Phil. Acad.); swamp 1 mile west of Dennisville, Cape May County, August 16, 1925, *R. R. Driesbach,* no. 3869 (Phil. Acad.); swamp, "Head of River", Tuckahoe River, Cape May County, August 23, 1925, *Driesbach,* no. 3982 (Phil. Acad.). DELAWARE: moist soil, Lewes, August 15, 1895, *Commons* (Phil. Acad.). VIRGINIA: without definite locality, *John Ball* (as *R. glomerata,* var.); sandy and peaty border of Cat Pond, south of Benns Church, Isle of Wight County, September 18, 1937, *Fernald & Long,* no. 7357 (distrib. as *R. microcephala*), TYPE in Herb. Gray. NORTH CAROLINA: sandy soil, Beaufort (Cartaret County), August, 1903, *Ruth,* no. 9 (with memorandum, "Seems to be *R. glomerata* but I am not sure of it; the leaves are too setaceous for that"); drainage ditch near Hubert, Cartaret County, August 6, 1938, *Godfrey,* no. 5844 (as *R. glomerata,* exceptionally large plant with several glomerules borne in branching axillary cymes); pineland at Atlantic, Cartaret County, September 1, 1938, *Godfrey,* no. 6427 (as *R. glomerata,* var. *minor*); savannah 8 miles southwest of Jacksonville, Onslow County, September 1, 1938, *Godfrey,* no. 6469 (as *R. glomerata,* var. *minor*); savannah 12 miles north of Jacksonville, August 6, 1938, *Godfrey,* no. 5753 (as *R. glomerata,* var. *minor*); Pender County, September, 1880, *Hyams,* no. 4979 (herb. N. Y. Bot. Gard.); dried-out road-making sand-pit, 4 miles east of Bolton, Columbus County, July 5, 1927, *Wiegand & Manning,* no. 581 (as *R. axillaris*); Southport, Brunswick County, August 13, 1930, *Blomquist* (as *R. microcephala*). SOUTH CAROLINA: shrub-bog, 3 miles east of Georgetown, Georgetown County, July 21, 1939, *Godfrey & Tryon,* no. 774; grass-sedge bog or savannah, 12 miles north of Georgetown, August 2, 1939, *Godfrey & Tryon,* no. 1060; sandy drainage ditch, west of Salters, Williamsburg County, July 14, 1939, *Godfrey & Tryon,* no. 514; marshy border of lake, 8 miles southeast of Columbia, Lexington County, August 8, 1939, *Godfrey & Tryon,* no. 1339; damp soil, Aiken, July 28, 1866, *H. W. Ravenel* (as *R. cephalantha*?). FLORIDA: swamps, Sanford, November 3, 1927, *S. Rapp* (herb. N. Y. Bot. Gard.).

Rhynchospora chalarocephala (from the loose heads) belongs to § *Eurhynchospora,* series *Glomeratae,* having the characteristic "wire-edged" smooth and lustrous umbonate obovoid achene drawn out at base into a pronounced slender stipe. As shown by the original identifications, it has been (often with doubt) placed in *R. glomerata, R. capitellata* (*R. glomerata,* var. *minor*),

R. "axillaris", R. cephalantha and *R. microcephala.* Its closest affinity is with *R. microcephala,* since it has the spikelets 1-flowered, *R. glomerata* and *R. capitellata* having two or more florets to each spikelet, or, if with only one true floret, then with one or more terminal rudiments. Its tightly inrolled scales and small achenes also place it with *R. microcephala.* From that species (FIGS. 3 and 4) it is distinguished in gross aspect by the character of the inflorescence. This is composed of 3–7 remote glomerules which are turbinate or subhemispherical at full development. Never tightly compacted, they are often subdivided into a cluster of as many as 5 smaller secondary and mostly approximate fascicles, thus suggesting the inflorescences of *R. glomerata* and *R. capitellata.* As may be deduced from the shape of the fascicles, the spikelets are mainly ascending to loosely spreading, more rarely divergent.

R. microcephala, on the other hand, as shown by the type, kindly placed at our disposal by Dr. A. C. Smith and Mr. Wittrock, and as illustrated in RHODORA, xxxvii. t. 391, figs. 1 and 5 (1935), has the inflorescence normally composed of 4–6 remote globose heads, the spikelets of which are closely compacted, ascending to reflexed, thus presenting a solid aspect. Specimens of *R. microcephala* collected in shaded or unfavorable habitats may simulate *R. chalarocephala,* but in no case do they have the lateral glomerules lobed or forked. The basal leaves also afford a diagnostic character of secondary importance. Those of *R. microcephala* are commonly 1.5–3 mm. broad, and flat. In *R. chalarocephala,* however, they are rarely 2 mm. wide, being usually narrower, even to subfiliform, and usually involute in age. In borderline cases, where the gross appearance of the two species is similar, the identity can be determined by study of the mature achenes. Those of *R. chalarocephala* (FIG. 1), although of the same length and breadth as in *R. microcephala* (FIG. 3) usually have the longer and narrower stipe passing more abruptly to the main body of the achene, which is, therefore, proportionally shorter.

The ranges of *R. microcephala* and *R. chalarocephala* overlap, but their relative distribution varies. The former species, ranging from New Jersey southward along the Coastal Plain, is local in New Jersey but attains a maximum development in south-

eastern Virginia and eastern North Carolina, dwindling, though locally present, in South Carolina, Georgia, Florida, Alabama and Mississippi. *R. chalarocephala* is relatively common at its northern limit in New Jersey and, although we have seen only two collections (one without stated locality) from Virginia, it is apparently common in eastern North and South Carolina. We have found only one collection from Florida.

[RHYNCHOSPORA DODECANDRA Baldw. In RHODORA, xxxix. 328 and 389 (1937), I recorded this species as occurring near the Crater in Prince George County (no. 5652). The material is too young and repeated search has failed to reveal *R. dodecandra* there. Suspecting its identity Miss Gale and I have restudied it. It proves to be very young *Juncus biflorus* Ell., the flower-buds being those of *Juncus*. *Rhynchospora dodecandra* thus drops from the Virginia flora. This misidentification is inexcusable, more absurd than the once reported occurrence of *R. macrostachya* in Vermont, based upon insect-galls on *Juncus canadensis!*]

*R. PALLIDA M. A. Curtis. NANSEMOND COUNTY: sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 10,550, forming large stools 1.1 m. high.

The first station between southeastern North Carolina and southern Delaware. See p. 381 and MAP 14.

R. PERPLEXA Britton. Local range extended to DINWIDDIE COUNTY: flat pineland, Collier's Yard, 3–4 miles southwest of Petersburg, no. 10,981. SURRY COUNTY: exsiccated argillaceous pond-hole in woods, about 1 mile south of Mercy Seat Church, no. 8989. See p. 382.

R. DISTANS (Michx.) Vahl. To the single small station in Isle of Wight County, reported in RHODORA, xxxix. 391 (1937), add from NANSEMOND COUNTY: wet peaty pine barrens, east of Cox Landing, south of South Quay, nos. 10,551–10,554, ranging in height from 2 dm. to 1 m.; similar habitat, southeast of Sandy Landing, south of South Quay, no. 10,980. See p. 379.

CAREX CRUS-CORVI Shuttlew., var. VIRGINIANA Fern. Local range extended into GREENSVILLE COUNTY: wooded bottomland of Fontaine Creek southeast of Taylor's Millpond, no. 10,154. SOUTHAMPTON COUNTY: wooded bottomland of Meherrin River, south of Hugo, no. 10,155.

Both stations within a mile of North Carolina!

C. FRANKII Kunth. Local range extended to the coast. PRINCESS ANNE COUNTY: in low woods along Back Bay, Long Island, no. 10,557. See p. 371.

*C. INTUMESCENS Rudge × LOUISIANICA Bailey. Plants clearly of this origin, cespitose like *C. intumescens* but with elongate

pistillate spikes suggestive of those of *C. louisianica*, local in Sussex County: wooded bottomland, Jones Hole Swamp, west of Coddyshore, June 18, 1939, no. 10,174.

Arisaema. In view of the revision in Rhodora, xlii. 247–254, plates 598–600, the following are recognized on the Coastal Plain of Virginia.

A. triphyllum (L.) Schott. (*A. pusillum*, forma *pallidum* E. H. Eames). Princess Anne County: rich woods, Great Neck, *Fernald & Griscom*, no. 4351; Little Neck, no. 3822. Prince George County: rich deciduous woods, Coggins Point, no. 9703. Henrico County: dark shady places, University of Richmond, Westhampton, May, 1933, *Harriet M. Walton*. Southampton County: sphagnous pocket in rich deciduous woods northeast of Statesville, no. 8176; rich wooded slopes and spring-heads along Nottoway River, above Carey Bridge, no. 11,799. Type a Clayton specimen from Virginia.

A. triphyllum, forma pusillum (Peck) Fern. Princess Anne County: rich woods, Great Neck, *Fernald & Griscom*, no. 4350. Henrico County: damp woods, Westhampton, April 25, 1935, *Alice Ryland*. Southampton County: rich wooded slopes and spring-heads along Nottoway River, above Carey Bridge, no. 11,800.

[A. atrorubens (Ait.) Blume. Fruiting plants, not showing the fresh spathes, but referable to the species, common. We have seen no typical *A. atrorubens*, with unstriped full-purple hood.]

A. atrorubens, forma zebrinum (Sims) Fern. Prince George County: rich wooded ravine southeast of Hopewell, no. 9702; sandy alluvial woods, bottomland of Powell Creek, Garysville, no. 7785.

*A. atrorubens, forma viride (Engler) Fern. Princess Anne County: damp woods, Virginia Beach, *Fernald & Griscom*, no. 4349. Prince George County: rich deciduous woods, Coggins Point, no. 9704; sandy alluvial woods, bottomland of Powell Creek, Garysville, no. 7784. Sussex County: wooded bottomlands and swampy woods near Nottoway River, east of Stony Creek, no. 8175.

Are two Species passing as Peltandra virginica? On p. 360 I emphasized the marked differences in the freshly flowering material of the more northern and more southern plants which pass as *Peltandra virginica*. The two extremes are striking in fresh condition but, as in most aroids, the herbarium specimens are almost hopeless to make out. I am, therefore, merely

showing photographs of characteristic fresh and passing spathes and a flowering spadix of each, × 1.

Plate 627 is of the southern plant, common in southeastern Virginia, thence to Georgia. It is characterized by the loosely opening white-margined spathe (fig. 1) which, at the base of the limb soon becomes deliquescent (fig. 3), the limb coming squarely off by circumscission. The summit of the orange-yellow spadix (figs. 2 and 4) is sterile or only weakly floriferous. The photographs were made from fresh material collected by the Appomattox River at Petersburg, Virginia, in June, 1940.

Plate 628 is of the northern plant, occurring at least from southern Maine to New Jersey and Pennsylvania. Its greener, though pale-margined spathe (figs. 1 and 2) barely opens or is tightly rolled. The limb decays away, leaving a stub at the summit of the fruit (fig. 3); and the whitish spadix (fig. 4) flowers to the tip. The photographs are from fresh material collected in June, 1939, by Dr. Lyman B. Smith in Aberjona River, Winchester, Massachusetts.

As stated, I am unable from herbarium material to reach a decision as to the importance of these characters. I merely present the problem, with the hope that many others will carefully watch and most carefully collect the plants from New England southward and westward, recording their observations on the degree of opening of spathe, circumscission or gradual rotting off of the limb, color of spadix and whether it flowers to the tip. If someone will volunteer to collate the material and reach a decision I shall be greatly relieved.

When it is clearly settled whether we have two species or two well defined geographic varieties, the names must be carefully weighed. The Linnean type is now underground and not available and those of Rafinesque are, if preserved, presumably also in European herbaria. Whether they would show more than most existing material in modern herbaria is questionable; but, until they are all traced and carefully considered and it is determined whether the contrasts evident in Virginia and from Pennsylvania to Maine are constant, it is, I feel, premature to make a decision which, at best, would be only tentative and too liable to upset. In 1890 Sereno Watson,[13] stating that

[13] Watson, Proc. Amer. Acad. xxv. 187 (1890).

"Extreme forms received from Mr. A. Commons of Wilmington, Del., seemed to indicate that two species might perhaps be distinguished", went extensively into the matter. He studied the flowers, staminodia, ovaries and their number, and other technical characters from variable fresh material. Besides the Commons material (with both open and tightly rolled spathes) and the Cambridge material, Watson had several lots of specimens (now showing little) sent by J. N. Rose from near Washington. His conclusion was that "a study of the forms growing near Cambridge shows that no division can be safely made". With relatively little experience in the group and a profound ignorance of the more technical characters, I hesitate, as stated, to make a hasty decision.

As to the names, the following must be carefully considered: *Arum virginicum* L. and at least 9 proposed for species by Rafinesque; it must also be determined to which species or variety the formal names proposed by Blake apply. The final solution, I feel, should be deferred until the applications of the 10 specific names and the several formal ones can be satisfactorily determined.

Eriocaulon Parkeri Robinson. To Grimes's station at Lanexa, add the following. King William County: fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, no. 11,539. New Kent County: fresh tidal marsh by Chickahominy River, at "Shady Rest", southeast of Windsor Shades (Boulevard Postoffice), no. 11,538. Charles City County: sandy tidal shore of James River at "Four Oaks", below Harrison Point, no. 11,282. James City County: tidal mud along Powhatan Creek, north of Jamestown Island, no. 10,988. Nansemond County: muddy tidal margin of Blackwater River, Cox Landing, south of South Quay, no. 11,283. See pp. 386, 391, 399 and 401 and map 17.

The last station is near the head of tide on a river tributary to the Chowan in North Carolina. The plant should confidently be sought in the latter state.

Lachnocaulon anceps (Walt.) Morong. Local range extended eastward into Nansemond County: sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 10,563. See p. 381.

Xyris ambigua Beyrich. Local range extended eastward to Nansemond County: sphagnous savannah-like swale east of

Photo. W. H. Hodge.

PELTANDRA VIRGINICA, southern representative (from Virginia), × 1: FIG. 1, fresh spathe; FIGS. 2 and 4, fresh spadices; FIG. 3, old spathe, showing deliquescence of base of limb.

Photo. W. H. Hodge.

PELTANDRA VIRGINICA, northern representative (from Massachusetts), × 1: FIGS. 1 and 2, fresh spathes; FIG. 3, old spathe, with limb rotted away; FIG. 4, fresh spadix.

Cherry Grove, south of South Quay, no. 10,567, gigantic stools up to 3 dm. in diameter at base.

*Xyris caroliniana Walt., forma **flaccida,** f. nov., foliis submersis flaccidis 5–8 mm. latis plerumque 2–4.5 dm. longis translucentibus vel opacis 11–23-nerviis.—Tidal and perhaps other submersed areas, southeastern Pennsylvania, southern New Jersey, eastern Delaware and southeastern Virginia. Pennsylvania: sandy-muddy tidal shore of Delaware River, southeast of Tullytown, Bucks County, September 6, 1927, *Long,* no. 33,786 (Herb. Phil. Acad.). New Jersey: Mullica River, below "the Forks", Atlantic County, August 21, 1910, *Long,* no. 4727; tidal marsh, within 1 mile south of Catawba, along Great Egg Harbor River, August 6, 1937, *Long,* no. 51,208 (type in Herb. Gray, isotype in Herb. Phil. Acad.). Delaware: 2nd mill pond west of Railroad Station, Milford, Sussex County, July 21, 1908, *Long* (Phil. Acad.); shore of Red Mill Pond, near Lewes, Sussex County, August 17, 1923, *J. P. Otis* (Phil. Acad.); sandy ditches near Georgetown, Sussex County, August 26, 1897, *A. Commons* (Phil. Acad.); Millsboro, Sussex County, September 21, 1907, *S. Brown* (Phil. Acad.). Virginia: fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, King William County, October 14 and 16, 1939, *Fernald & Long,* no. 11,540; completely submerged at high tide, fresh tidal marsh of Chickahominy River, below Barrat's Bridge (or Ferry), James City County, September 19, 1939, *Fernald & Long,* no. 11,284; muddy tidal margin of Blackwater River, Milk Landing, south of South Quay, Nansemond County, September 22, 1939, *Fernald & Long,* no. 11,285; muddy tidal margin of Blackwater River, Cox Landing, south of South Quay, Nansemond County, September 22, 1939, *Fernald & Long,* no. 11,286. See pp. 396 and 399.

Forma *flaccida,* in its very thin, often translucent, and mostly broad leaves is readily confused with *X. difformis* Chapm. It has, however, the small heads and flowers of *X. caroliniana* and the relatively few nerves in the leaves. *X. difformis* is usually coarser, with the very thin and translucent leaves (emersed) 6–14 mm. broad and 20–40-nerved, often falcate, half as long as to longer than the scapes, the latter when fresh conspicuously winged; the mature heads are 1–2 cm. long, and the seeds about 25-ribbed. It is locally abundant in the extreme South, coming north to eastern Maryland, with a station near Laurel, Delaware (sandy swamps, Pepper's Mill, *A. Commons* in Herb. Phil. Acad.).

Typical *X. caroliniana,* occurring from Florida to Louisiana,

north to Nova Scotia, southeastern and central Maine, north-central New Hampshire, southeastern Vermont, eastern New York, thence west to Parry Sound, Ontario, Michigan and northern Indiana, is smaller, its opaque or subopaque leaves 0.5–6 mm. wide, mostly ⅓–½ as long as the mature scapes, and only 3–18-nerved (nerves vaguely seen by transmitted light). The scapes are less winged than in *X. difformis*, the mature spike 0.5–1.4 cm. long, the seeds about 13-ribbed.

In its thinner and mostly broader (5–8 mm. wide) elongate leaves (½ as long to nearly as long as scapes) *X. caroliniana* forma *flaccida* might be mistaken for *X. difformis*, especially when the leaves are translucent or not too encrusted with silt, but they have only 11–19 (rarely –23) nerves as in *X. caroliniana*, mature heads only 0.8–1.3 cm. long, and the seeds of *X. caroliniana*.

X. FLEXUOSA Muhl. (*X. arenicola* Small). Local range extended into NANSEMOND COUNTY: wet sandy and peaty depressions in pineland southwest of Marsh Hill School, south of South Quay, no. 10,992; very abundant in sandy and peaty pine barrens, east of Cox Landing, south of South Quay, no. 10,566, this area covering many square miles. ISLE OF WIGHT COUNTY: sandy and peaty pine barrens south of Lee's Mill, no. 12,283. See p. 379.

*COMMELINA DIFFUSA Burm. f. (*C. nudiflora* of Am. auth., not L.). KING WILLIAM COUNTY: fresh tidal shore of Mattaponi River, northwest of King William Courthouse, no. 11,550. CHARLES CITY COUNTY: sandy tidal shore of James River at "Four Oaks", below Harrison Point, no. 11,298. PRINCESS ANNE COUNTY: low woods and clearings along Back Bay, Long Island, no. 10,995. NORFOLK COUNTY: Dismal Swamp, Wallaceton, July 17, 1891, *A. B. Seymour*, no. 39. SOUTHAMPTON COUNTY: wooded alluvial bottomland of Meherrin River, near Haley's Bridge, no. 9290. GREENSVILLE COUNTY: weed in fencerow, Emporia, nos. 9291 and 10,996. See pp. 388 and 391.

In his enumeration of stations for *C. diffusa* (as *C. longicaulis*) Pennell, Bull. Torr. Bot. Cl. xliii. 100 (1916), cited no specimens from north of Georgia except on ballast at Philadelphia. Although sometimes a weed in southeastern Virginia, *C. diffusa* is a constituent element of the flora of bottomlands and in tidal marshes. It has this dual behavior in many regions. If an adventive, it has frequently sought out very natural habitats.

Its pantropical distribution indicates its plasticity at least in recent times.

The Varieties of Commelina erecta (Plates 629–631).—One of the most bafflingly intricate series in *Commelina* is the group of plants which broadly constitute *C. erecta* L. In southeastern Virginia we get four variations of it, which by the treatment in Small's *Flora of the Southeastern United States* could be sorted into seven so-called species. Varying from plants 1 dm. high, with linear leaves at most 3 mm. broad and with fruiting spathes barely 1 cm. long to colonies 1.2 m. high, with lance-ovate leaves 4 cm. broad and spathes 3.6 cm. long, ranging from southeastern New York to Nebraska, thence south to the West Indies, Gulf States and Mexico, sometimes in the driest of sands, again in rich alluvium, these plants have naturally offered a fertile field for the "splitter". But in his treatment of the group in 1916 Pennell[14] sounded the call for retreat from further specific segregation; for, although he then maintained three species in the series (*C. erecta* L., *C. angustifolia* Michx. and *C. crispa* Wooton), he hesitated about recognizing more than one, *C. erecta,* saying (p. 105): "*Commelina angustifolia* Michx. and *C. crispa* Wooton, until more fully compared living, are continued as of specific rank. Both are probably better considered as geographic varieties of *C. erecta.*" Pennell forthwith reduced to *C. erecta* the recently proposed *C. saxicola* Small, and to *C. angustifolia* both *C. Swingleana* Nash and *C. Nashii* Small. With these reductions I am heartily in accord. But, even the recognition of three varieties, typical *C. erecta* and vars. *angustifolia* (Michx.) and *crispa* (Wooton) Palmer & Steyermark, does not satisfactorily settle the problems in the species. In order to see how in the most conservative treatment we have, Pennell's, the three elements are defined we may quote his key:

Leaves lanceolate. Posterior petals usually larger, 12–25 mm. long. Seeds mostly more or less oblong ..... 6. *C. erecta*
Leaves linear-lanceolate. Posterior petals usually smaller, 10–15(–20) mm. long. Seeds mostly circular .....
Spathes 1.5–3 cm. long, with mostly long white hairs near the base. Posterior petals 12–18(–20) mm. long ..... 7. *C. crispa*
Spathes 1–2 cm. long, rarely with long white hairs near the base. Posterior petals mostly 10–15(–18) mm. long 8. *C. angustifolia*

[14] Pennell: *The Genus Commelina (Plumier) L. in the United States,* Bull. Torr. Bot. Cl. xliii. 96–111 (1916).

In 1938 Pennell wrote "I would now consider that this species includes as narrow-leaved subspecies the southern *C. angustifolia* Michx. and the southwestern *C. crispa* Wooton."[15] With this decision I entirely agree, except that the free intergradation of the three compel me to treat them as two geographic varieties and a minor form, rather than to dignify them as subspecies.

There is practically no doubt about the identity of *Commelina erecta* L., although there has long been needless confusion of it with *C. virginica* L. (the coarse species with extensively creeping rhizome and stolons, the sheath of the leaf with erect summit fringed with long erect reddish bristles, whereas *C. erecta* has a fascicle of fleshy root-fibers and the sheath has a spreading flange-like summit short-ciliate with white hairs). It was long cultivated in Europe as *C. erecta* and Linnaeus described it "foliis ovato-lanceolatis" (rendered by Pennell simply "lanceolate", and by Small, Fl. Se. U. S. 242, "linear to linear-lanceolate"). The plant of European gardens, "*Habitat in* Virginia", was well shown by Dillenius in *Hortus Elthamensis*, his plate cited by Linnaeus and, in view of the confusion evident in the Linnean Herbarium, selected by the late C. B. Clarke in DC. Mon. iii. 181, to stand for *C. erecta*. Dillenius showed broadly lanceolate leaves nearly 3 cm. broad, the spathes about 3 cm. long. Just such a plant, tall (up to 1.2 m. high), with broad leaves on the primary axis, and with large spathes, occurs in relatively rich soil from southeastern New York to Kansas, south to Florida, Louisiana and eastern Texas. Much of the material of this largest extreme of the species has the spathes (PL. 629, FIG. 1) subglabrous to only minutely hirtellous but, creating confusion, a considerable series (PL. 629, FIG. 3), differing in no other notable character, has the base of the spathe as shaggily villous with long white trichomes as in the western plants called var. *crispa* (low and with linear or linear-lanceolate leaves and small spathes). This large plant, with white-villous spathe-bases (PL. 629, FIGS. 2 and 3), is regularly dispersed through much of the range of typical *C. erecta* and, although it differs from it as var. *crispa* does from var. *angustifolia*, it can be called only a form, not a geographic variety.

The type of var. *angustifolia*, *C. angustifolia* Michx., as shown

[15] Pennell in Bartonia, no. 19: 21 (1938).

Photo. H. G. Fernald.

COMMELINA ERECTA: FIG. 1, mature spathe, × 2.
Forma INTERCURSA: FIG. 2, flowering tip, × 1; FIG. 3, spathe, × 2.
C. ERECTA, var. ANGUSTIFOLIA, forma CRISPA (*C. crispa*): FIG. 4, spathe, × 2, from western Texas; FIG. 5, spathes, × 2, from Virginia.
C. ERECTA, var. HAMIPILA: FIG. 6, spathe, × 1.

Photo. H. G. Fernald.

COMMELINA ERECTA, var. ANGUSTIFOLIA: FIGS. 1 and 2, portions of Michaux's TYPE of *C. angustifolia*, × 1; FIG. 3, spathes, × 2, from Georgia.

by a photograph of Michaux's plant (our PLATE 630, FIGS. 1 and 2) has merely narrowly lanceolate leaves (6–8 cm. long, 4–9 mm. broad) and spathes 1.6–2 cm. long. Just such a plant, low, with narrowly linear to narrowly lanceolate leaves mostly less than 1 dm. long and 0.4–2 cm. broad and mature spathes mostly 1–2 (rarely –2.5) cm. long, occurs in dry sands or rocky soils from Florida to Texas and northern Mexico, north to Delaware, West Virginia, southern Illinois, Missouri and Kansas. In this typical var. *angustifolia*, from which the types of *C. Swingleana* Nash ("leaves . . . 4–6 cm. long, 5–7 mm. wide . . .; spathe . . . 2 cm. long") and of *C. Nashii* Small ("leaf-blades 4–8 cm. long . . .; spathes 1 cm. long") are inseparable, the spathe (PL. 630, FIG. 3) is rather densely short-hirtellous; but the reputed var. *crispa* ("leaves . . . 3–7 cm. long, 4–6 mm. wide . . .; spathe . . . 1.5–2 cm. long, 1 cm. broad") seems to differ from it only in having the base of the spathe villous with long white trichomes. Var. *crispa* (PL. 629, FIG. 4) is supposed to occur from northern Mexico to Missouri and Nebraska and about the head of Lake Michigan. In the material from southern Michigan and northern Indiana I find no such long hairs, but specimens from Nebraska southward and southwestward often display them (PL. 629, FIG. 4). Except for this single character I find nothing by which var. *crispa* differs from var. *angustifolia*. The situation is nearly parallel with that in the broad-leaved typical *C. erecta;* in fact, it is quite parallel, for some of the low and narrow-leaved plants with relatively small spathes, in the sands of eastern Virginia, (PL. 629, FIG. 5) have the long trichomes which place them with *C. crispa*, supposedly restricted to the Southwest. I can, therefore, see in the latter only a barely recognizable form of var. *angustifolia*. The fact that, upon geographic grounds alone, highly competent students have been placing the plants of northern Mexico impartially in *C. crispa*, though most of them are typical var. *angustifolia*, is eloquent.

The plant of northern Indiana, often referred to *C. crispa*, lacks the long white pubescence of the spathes of true but relatively unimportant var. *crispa*. In the latter the longer leaves are mostly 4–10 cm. long, the mature spathes usually 1–2 (rarely –2.5) cm. long. The plant of northern Indiana and adjacent Michigan (PL. 631), thence locally to Texas, has the

longer (but narrow) leaves 7–15 cm. long, the mature spathes mostly 2.5–3 cm. long. It seems to be a well defined geographic variety, with which it is a pleasure to associate the name of its chief collector, the always alert Charles C. Deam.

In peninsular Florida, extending down to the Keys, there is another extreme (pl. 629, fig. 6), placed by Small and others in *C. angustifolia*. In the latter and in var. *Deamiana*, however, the mature spathes are more than half as high as long, with the lower margin straightish or only slightly curved, and the larger leaves are 4–20 mm. broad. The plant of the Florida Keys and southern and central Florida is very low and slender, the leaves only 3–5 mm. broad, the strongly falcate spathes long-beaked, 1.8–2.8 cm. long and less than half as high as long. It is a close match for the isotype in the Gray Herbarium of *C. hamipila* Wright, of Cuba. Clarke kept *C. hamipila* apart as a species, though stating that it was scarcely separate from *C. erecta*. The meagre material before him suggested that the spathes were solitary and axillary, never clustered. That they may be either solitary or grouped is now apparent from the several collections at hand. No difference in seed is evident and I am treating *C. hamipila* as a characteristic variety of southern Florida and Cuba.

As I see *Commelina erecta* it is a polymorphous species with pronounced but freely confluent varieties, as follows:

a. Stems (0.45–)0.6–1.2 m. high; larger leaves of primary axes lanceolate to lance-ovate, (0.9–)1–1.5 dm. long, (1.5–)2–4 cm. broad; mature spathes (2.2–)2.5–3.6 cm. long ..... Var. *typica*.

a. Stems 1–4.5(–7) dm. high; larger leaves of primary axes narrowly linear to linear-lanceolate, 3–12(–20) mm. broad; mature spathes 1–2.7(–3) cm. long.

Mature spathe more than half as high as long, the lower margin only slightly curved; larger leaves 4–20 mm. broad.

Longer leaves 4–10 cm. long; mature spathes 1–2(–2.5) cm. long ..... Var. *angustifolia*.

Longer leaves 7–15 cm. long; mature spathes mostly 2.5–3 cm. long ..... Var. *Deamiana*.

Mature spathe less than half as high as long, strongly falcate to the prolonged beak, 1.8–2.8 cm. long; larger leaves 3–5 mm. broad ..... Var. *hamipila*.

C. erecta L., var. **typica.** *C. erecta* L. Sp. Pl. 41 (1753), "*Habitat in* Virginia"; Clarke in DC. Mon. iii. 181 (1881); Pennell in Bull. Torr. Bot. Cl. xliii. 104 (1916).—Loamy or sandy soil, more rarely in rocky places, southeastern New York to Kansas, south to Florida, Louisiana and Texas. Plate 629, fig. 1.

Photo. H. G. Fernald.

COMMELINA ERECTA, var. DEAMIANA: FIGS. 1–3, portions of TYPE, × 1; FIG. 4, an inflorescence, × 1.

Photo. W. H. Hodge.

LILIUM CATESBAEI: FIG. 5, base, and FIG. 6, flower, × ½, from Duval County, Florida; FIG. 7, capsule, × 1, from South Carolina; FIG. 8, seeds, × 5, from South Carolina; FIG. 9, seed, × 5, from South Carolina; FIG. 10, seed, × 5, from Florida.
Var. LONGII: FIG. 1, plant folded (with bulb in lower left-hand corner), × ½, from TYPE-series; FIGS. 2 and 3, capsules, × 1, from TOPOTYPE; FIG. 4, seeds, × 5, from same collection.

On the Coastal Plain of southeastern Virginia we have it only from Southampton County: dry woods, thickets and clearings along Three Creek, Drewryville, no. 5701.

*Forma **intercursa,** f. nov. (tab. 629, fig. 2 et 3), caulibus 0.45–1.2 m. altis; foliis majoribus primariis late lanceolatis 1–1.5 dm. longis 1.5–4 cm. latis; spathis maturis 2.3–3.6 cm. longis basi longe albido-villosis.—Delaware: Laurel, September 21, 1880, *A. Commons.* Virginia: sandy thicket by James River, Jordan Point, Prince George County, July 23, 1938, *Fernald & Long,* nos. 8642, 8643 (type in Herb. Gray, isotype in Herb. Phil. Acad.); sandy pine and oak woods south of Zuni, Isle of Wight County, July 20, 1938, *Fernald & Long,* no. 8644 (transition to var. *angustifolia*); dry sandy open pine and oak woods, 6 to 7 miles south of Franklin, Southampton County, June 19, 1938, *Fernald & Long,* no. 8183. South Carolina: Congaree River, June 19, 1855, *Hexamer & Maier;* Santee Canal, June, —, *H. W. Ravenel.* Georgia: dry rocky woods on southwest slope of Kennesaw Mountain, Cobb County, July 12, 1900, *Harper,* no. 219; northwest slope of Stone Mountain, DeKalb County, July 10, 1900, *Harper,* no. 11. Tennessee: cult. Harvard Bot. Gard. 1847, from French Broad River, *Gray.* Missouri: woods, Eagle Rock, August 12, 1905, *Bush,* no. 3222; dry soil, Prosperity, June 17, 1909, *Bush,* no. 2242.

Var. **angustifolia** (Michx.), comb. nov. *C. angustifolia* Michx. Fl. Bor.-Am. i. 24 (1803); Pennell in Bull. Torr. Bot. Cl. xliii. 108 (1916). *C. virginica, β angustifolia* (Michx.) C. B. Clarke in DC. Mon. iii. 183 (1881). *C. Swingleana* Nash in Bull. Torr. Bot. Cl. xxii. 160 (1895); Small, Fl. Se. U. S. 242 (1903). *C. Nashii* Small, l. c. (1903).—Dry sandy soil, Florida to New Mexico and Mexico, north to Delaware, West Virginia, southern Illinois, Missouri and Nebraska. Plate 630.

*Var. angustifolia is known in Virginia from the following stations. York County: sandy clearings near Capital Landing, Queen's Creek, *Grimes,* no. 4081. Warwick County: Old Point Comfort, September 15, 1885, *N. L. Britton.* Princess Anne County: dry pine and oak woods, Cape Henry, *Fernald & Griscom,* no. 2805. Isle of Wight County: dry sandy pine barrens, south of Zuni, *Fernald, Griscom & Long,* no. 6565. Southampton County: dry sand, pine barren about 7 miles south of Franklin, no. 7373. Nansemond County: dry sandy woods along Pitch Kettle Creek, north of Lake Kilby, *Fernald, Long & Fogg,* no. 4840 (unusually tall, but with small spathes).

*Forma **albina,** f. nov., petalis albis.—Dry sandy barrens, Cape Henry, September 24, 1933, *Fernald & Griscom,* no. 2804 (type in Herb. Gray).

Forma **crispa** (Wooton), comb. nov. *C. crispa* Wooton in Bull. Torr. Bot. Cl. xxv. 451 (1898); Pennell, ibid. xliii. 107 (1916). *C. erecta*, var. *crispa* (Wooton) Palmer & Steyermark in Ann. Mo. Bot. Gard. xxii. 417 (1935), without bibliographic reference, and in Rhodora, xl. 131 (1938), validation.—Through much of the range of the var. Plate 629, figs. 4 and 5.

*Forma crispa is known in Virginia at the following stations. Fauquier County: by railroad, Beverly Mill, *H. A. Allard*, no. 1013. New Kent County: dry sandy field by Chickahominy River, Lanexa, *Grimes*, no. 4172. Sussex County: dry sandy hickory and oak woods, Burt, no. 6133. Nansemond County: white sand of pine and oak woods and clearings near Cathole Landing, west of Factory Hill, no. 12,285.

Var. **Deamiana**, var. nov. (tab. 631), caulibus gracilibus 2–6 dm. altis; foliis lineari-lanceolatis vel linearibus majoribus 7–15 cm. longis 5–15(–20) mm. latis; spathis maturis plerumque 2.5–3 cm. longis.—Michigan: "State Collection". Indiana: sand hills on west or southwest side of Lake Maxinkuckee, Marshall County, August 19, 1915 and July 15, 1920, *Deam*, nos. 17,944 and 31,900; sand hill north of Ora, Starke County, July 14, 1920, *Deam*, no. 31,852; sandy cut along roadside 6 miles south of Vincennes, Knox County, July 8, 1915, *Deam*, no. 17.087; very sandy soil along railroad at Duncan Siding, about 4 miles southeast of Vincennes, August 18, 1931, *Deam*, no. 50,986; sand dunes, Dune Park, Porter County, July 30, 1897, *Umbach;* wooded sand hill, Dune Park, August 16, 1897, *Agnes Chase;* inner faces of frontal dunes, Mineral Spring, Porter County, August 13, 1920, *D. C. Peattie;* bog, Chesterton, Porter County, August 9, 1925, *J. R. Churchill;* very sandy roadside cut, 4½ miles north and 1½ miles west of Morocco, Newton County, August 30, 1916, *Deam*, no. 21,511; roadside sand-hill, 4½ miles northwest of Morocco, July 13, 1920, *Deam*, no. 31,662 (type in Herb. Gray). Illinois: Oquawka, July 7, 1908, *Gleason*. Kansas: shady places, Riley County, July 20, 1895, *J. B. Norton*, no. 524. Oklahoma: sandy hillside near Page, Leflore County, June 20, 1914, *O. W. Blakley*, no. 1456; Arbuckle Mountains, near Davis, June 25, 1917, *W. H. Emig*, no. 736. Texas: 3½ miles north of Jasper, Jasper County, May 18, 1937, *Cory*, no. 22,629.

Var. **hamipila** (Wright), comb. nov. *C. hamipila* Wright in Sauvalle, Fl. Cubana, 157 (1873).—Stems 1–4.5 dm. high; leaves linear, the larger 6–10 cm. long and 3–5 mm. broad; spathes 1.8–2.8 cm. long, less than half as high, strongly falcate, with prolonged beak.—Cuba and Florida. The following are from Florida: cleared hammock, New Smyrna, Volusia County, April

19, 1910, *S. C. Hood;* high pineland, vicinity of Eustis, Lake County, *Nash,* no. 387; dry sandy soil, open woodland, Kelsey City, Palm Beach County, *F. R. Randolph,* no. 105; riverside, East Fort Myers, Lee County, *A. A. Eaton,* no. 1416; pineland, vicinity of Fort Myers, *J. P. Standley,* no. 137; pineland, Mullock Creek District, southeast of Fort Myers, *J. P. Standley,* no. 430; Pine Key, *Blodgett:* Key West, *Blodgett.* PLATE 629, FIG. 6.

In PLATE 629, FIG. 1 shows a mature spathe (essentially glabrous), × 2, of *Commelina erecta* from Safe Harbor, Pennsylvania, *Heller & Heller,* no. 686; FIG. 2, a flowering tip, × 1 of forma *intercursa* from the type-station; FIG. 3, a spathe, × 2, from the TYPE of forma *intercursa,* showing the characteristic long hairs; FIG. 4, a mature spathe, × 2, of *C. erecta,* var. *angustifolia,* forma *crispa* (*C. crispa*) from western Texas, *Chas. Wright,* no. 700, in part; FIG. 5, spathes, × 2, of forma *crispa* from Burt, Sussex County, Virginia, *Fernald & Long,* no. 6133; FIG. 6, spathe, × 1, of var. *hamipila* from Florida, *J. G. Cooper.*

PLATE 630, FIGS. 1 and 2, portions of type, × 1, of *C. angustifolia* Michx., FIG. 3, spathes, × 2, of *C. erecta,* var. *angustifolia* from Stone Mountain, Georgia, *Wiegand & Manning,* no. 711.

PLATE 631, *C. erecta* var. *Deamiana:* FIGS. 1, 2 and 3, portions of TYPE, × 1; FIG. 4, inflorescence, × 1, from Mineral Springs, Porter County, Indiana, *D. C. Peattie.*

*ANEILEMA KEISAK Hassk. Thoroughly typical of fresh tidal marshes and shores from King and Queen to Nansemond County, and, doubtless, into North Carolina, flowering from September to frost. The following are the actual specimens collected. KING AND QUEEN COUNTY: Mattaponi River, Walkerton, no. 11,549. KING WILLIAM COUNTY: Mattaponi River, northwest of King William Courthouse, no. 11,548, and at Horse Landing, near King William Courthouse, no. 11,547. NEW KENT COUNTY: Pamunkey River, southeast of White House, no. 11,546; Chickahominy River at "Shady Rest", southeast of Windsor Shades (Boulevard Postoffice), nos. 11,290, 11,542; Chickahominy River, Lanexa, no. 11,543. CHARLES CITY COUNTY: James River at "Four Oaks", below Harrison Point, no. 11,282; Kimage's Creek, Kimage's, no. 11,291; Kittewan Creek, Weyanoke, nos. 11,292, 11,545; James River, Wilcox Wharf, no. 10,994; Morris Creek below Adams Bridge, no. 11,544. JAMES CITY COUNTY: Gordon Creek, east of Barrat's Bridge (or Ferry), no. 11,293. NANSEMOND COUNTY: Blackwater River at Milk Landing (no. 11,294) and at Cox Landing (no. 11,295), south of South Quay. See pp. 386, 391–394, 399 and 400 and MAP 20.

A characteristic plant, here recorded for the first time outside eastern Asia. It is a regular constituent of the estuarine flora, along with *Cyperus haspan* L., var. *americanus, Eryngium aquaticum, Rhynchospora macrostachya,* var. *colpophila* (see above) and the several other species which inhabit these peculiar

habitats. I have studied the material most carefully with Dr. Hiroshi Hara, who has been able to supply finely fruiting Asiatic specimens. In all characters, including the seeds, our plant seems quite inseparable from that of eastern Asia.

Tradescantia rosea Vent., var. graminea (Small) Anders. & Woodson. Local range extended eastward to Nansemond County: white sands of pine barrens south of South Quay (several nos.). See p. 379.

Juncus caesariensis Coville. Range in the state extended southward to Dinwiddie County: springy sphagnous swale about 5 miles east of Burgess Station, no. 11,000.

At our Henrico County station *J. caesariensis* was associated with an extraordinary series of species with disrupted ranges (see Rhodora, xli. 470, 473). So at the Dinwiddie County station it shares the honors with *Fuirena breviseta*, range extended north from North Carolina, *Scirpus debilis*, at our only station on the Virginian Coastal Plain, and other plants of great rarity in the region. See p. 389.

J. abortivus Chapm. To the single station recorded north of South Carolina (in Isle of Wight County) add from Nansemond County: very abundant in wet or moist sandy and peaty depressions of pinelands and pine barrens south of South Quay (many nos. from different stations). See p. 379.

J. megacephalus M. A. Curtis. To the previously recorded stations (False Cape and vicinity) add another, farther north in Princess Anne County: inner border of brackish to fresh marsh along Back Bay, at eastern margin of Long Island, no. 10,574. See pp. 370 and 371 and map 5.

J. diffusissimus Buckley. To the two stations previously recorded add the following, in Southampton County: wet clearing slightly west of Branchville, no. 10,190; along woodroad in wooded bottomland, Meherrin River, southeast of Branchville, no. 10,192; wet sandy roadside ditch south of Shiloh, no. 10,191; sandy roadside ditch southeast of Windman's Mill, no. 12,038. Greensville County: argillaceous clearing in swampy woods near Readjuster Bridge over Nottoway River, northeast of Orion, no. 12,039.

Tofieldia racemosa (Walt.) BSP. Local range extended eastward to Nansemond County: sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 10,577. See p. 381.

Zigadenus glaberrimus Michx. Local range extended eastward to Nansemond County: wet peaty pine barrens, east of

Cox Landing, south of South Quay, no. 10,579. Isle of Wight County: sandy and peaty pine barrens, south of Lee's Mill, no. 12,294. See pp. 374 and 381.

Melanthium virginicum L. Local range extended eastward to Nansemond County: wet bushy swale east of Cherry Grove, south of South Quay, no. 11,003. See p. 381.

*Lilium Catesbaei Walt., var. **Longii,** var. nov. (tab. 632, fig. 1–4), a var. typico recedit bulbi squamis ovoideis efoliosis; foliis oblongis, imis mediisque obtusis 6–13 mm. latis; tepalis laxe adscendentibus apice vix recurvatis ad 3.5 cm. latis; capsulis subtruncatis 2.5–4.5 cm. longis; seminibus 5–6 mm. longis ala 1.4–1.6 mm. lata.—Local, from southeastern Virginia to Georgia and Alabama. The following are placed here. Virginia: sphagnous savannah-like swale east of Cherry Grove, south of South Quay, Nansemond County, July 21, 1939, *Fernald & Long,* no. 10,582 (type in Herb. Gray, isotype in Herb. Phil. Acad.), October 15, 1939, *Fernald & Long,* no. 11,553. North Carolina: pineland at Delway, Sampson County, August 25, 1938, *R. K. Godfrey,* no. 6176; pineland, White Lake, Bladen County, August 14, 1938, *Godfrey,* no. 5988; peaty grass-sedge savannah at Carolina Beach, New Hanover County, August 7, 1938, *Godfrey,* no. 5903. Georgia: Columbus, *Boykin.* Alabama: low, grassy pine barrens near Bolling, Butler County, August 28, 1885, *J. Donnell Smith.* See pp. 381 and 403.

Typical *Lilium Catesbaei* (our plate 632, figs. 5–10) has the slender bulb-scales often, or usually, terminated by long erect linear leaf-blades; its cauline leaves are acutish to long-attenuate, the broader ones (in a large series of specimens) 2–12 mm. broad. Its tepals have typically long slender claws and prolonged recurving tips, the claw being usually 0.25–0.36 as long as the blade, measurements of flowers of 32 collections showing the claw averaging 0.26 as long as the limb or, in other words, the limb about three times the length of the claw. Measurements of the limb of the broadest tepal show a range from 4.5–9.5 cm. long, with an average length (from 60 specimens) of 7 cm., the breadth ranging from 1–2.6 cm. (average 1.8 cm.). The capsule narrows gradually to a beak and the seeds are 4–5 mm. long, with wing (at broadest point) 0.6–1.2 mm. wide.

Var. *Longii* (plate 632, figs. 1–4) on the other hand, has the plumper bulb-scales without the leafy tips; the middle and lower cauline leaves are blunt and oblong, 6–13 mm. broad; the tepals are loosely ascending, without prolonged and recurving tips, consequently the proportion of claw and blade is very differ-

ent, measurements of all the collections at hand showing the claw to be 0.3–0.42 (average 0.37) as long as the blade, in other words the blade about twice the length of the claw. In actual size the largest blades show a range from 4.5–6.5 (av. 5.5) cm. long, and 1.8–3.4 (av. 2.6) cm. broad. The capsule is subtruncate at summit, not narrowed to a beak, and the seeds are larger, 5–6 mm. long, with wing 1.4–1.6 mm. wide.

In their extremes the two plants are quite unlike. Unfortunately, however, transitions occur and several collections are as near one as the other. I am, therefore, constrained to treat the blunt-leaved plant with broad tepals scarcely recurving as a marked variety. It is noteworthy that at the northern limit of the variety it was in full flower on July 21. At its next known area to the south it is in full flower from August 7–14 (the collection of August 25 showing the flowers fading), while the Alabama material was collected in prime flower on August 28.

Lilium Catesbaei, according to English writers and also growers of lilies about Boston, is almost impossible to cultivate, in part because it stands no freezing. Now that we have a variety of it, sturdier and perhaps handsomer than typical *L. Catesbaei*, with a natural northern station in Virginia, where ice frequently forms and the children look forward to out-door skating, there is hope that var. *Longii* may prove to be a successful plant in northern gardens. Fully ripe seed collected in October has been supplied to the Harvard Botanic Garden and to several private growers of lilies.

In this study I have had the great advantage of having before me the material from the herbarium of the New York Botanical Garden. With its special concentration upon the Southeastern States, it was expected that this collection would add materially to the known stations of var. *Longii*. Very strikingly, however, it contains only typical or nearly typical *L. Catesbaei*.

In PLATE 632, FIG. 1 is one of the TYPE specimens, × ½, of var. *Longii* from Nansemond County, Virginia; FIGS. 2 and 3, capsules, × 1, from the same station, *Fernald & Long*, no. 11,553; FIG. 4, seeds, × 5, from no. 11,553. The figures of typical *L. Catesbaei* are from the following specimens: FIGS. 5 and 6, base and flower, × ½, from Baldwin, Duval County, Florida, *Nash*, no. 2321; FIG. 7, capsule, × 1, from Bluffton, South Carolina, 1871, *Mellichamp;* FIG. 8, seeds, × 5, from Eutawville, South Carolina, *Eggleston*, no. 5018 (N. Y. Bot. Gard.); FIG. 9, seed, × 5, from Bluffton, South Carolina, *Mellichamp;* FIG. 10, seed, × 5, from Florida, *Chapman* (N. Y. Bot. Gard.).

ALETRIS AUREA Walt. Local range extended eastward to NANSEMOND COUNTY: sandy and sphagnous margins of thickets in pineland southwest of Marsh Hill School, south of South Quay, no. 11,006.

*TRILLIUM LANCEOLATUM Boykin. ?NORFOLK COUNTY: Great Dismal Swamp, west of Wallaceton, April 24, 1926, *Paul A. Warren*, no. 413.

Specimen (unidentified) received in exchange from the College of William and Mary. Professor Warren tells me that it could have come only from west of Wallaceton, but whether in Norfolk or southeastern Nansemond County he does not know. First record from north of Georgia. See p. 375 and MAP 11.

SMILAX PULVERULENTA Michx. To the very few recorded stations add the following. SUSSEX COUNTY: rich woods and bushy clearing just east of the "fall-line" along Nottoway River, Double Bridge, about 6 miles northwest of Jarratt, no. 11,302. SOUTHAMPTON COUNTY: rich sandy and loamy woods along Three Creek, northwest of Carey Bridge, no. 10,210.

*HYPOXIS HIRSUTA (L.) Coville, forma **villosissima,** forma nov., scapis pedicellis perianthiis fructibusque persistenter denseque albido-villosis, villis ad 3–4 mm. longis.—VIRGINIA: sandy thickets and clearings near Coppahaunk Swamp, south of Waverly, very scarce, June 19, 1939, *Fernald & Long*, no. 10,214 (TYPE in Herb. Gray). NORTH CAROLINA: open woods, Winston-Salem, June 30, 1921, *P. O. Schallert.*

Typical *Hypoxis hirsuta,* with a very inappropriate name, has the scapes and pedicels sparsely pilose, the expanding perianth loosely short-pilose but soon glabrate and the fruit sparsely pilose. Forma *villosissima* is conspicuous on account of the permanent and very dense long white villosity of scape, pedicels, perianth and fruit. At the type-station it is very scarce but there associated with *Seymeria cassioides* and other species of dry pinelands.

H. LEPTOCARPA Engelm. & Gray. Range extended northward to NEW KENT COUNTY: bottomland woods by Chickahominy River north of Long Bridge, southeast of Quinton, no. 11,304.

A considerable northward extension, from Greensville, Southampton and Nansemond Counties. See p. 397.

SISYRINCHIUM MUCRONATUM Michx. Local range extended southward into GREENSVILLE COUNTY: rich woods near Three Creek, north of Emporia, no. 10,217.

*×Gladiolus gandavensis Van Houtte. Dinwiddie County: old field, south of Petersburg, no. 10,593. Seen persisting in other old fields.

Canna flaccida Salisb. Prince George County: roadside fill bordering wooded swamp, northwest of Disputanta, no. 10,008.

Burmannia biflora L. Local range extended eastward into Nansemond County: sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 11,009. See p. 384.

*×Habenaria Canbyi Ames. A single plant flowering with abundant *H. blephariglottis* and *H. cristata*, sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 10,601. See p. 381.

Cleistes divaricata (L.) Ames. Nansemond County: scattered and scarce at two stations south of South Quay, nos. 11,010 and 11,011. See pp. 380 and 384.

*Calopogon pallidus Chapm. Nansemond County: sandy and peaty pine barrens east of Cox Landing, south of South Quay, no. 10,603; moist peaty depressions in white sand of pine barrens 1–1½ miles south of Cherry Grove, south of South Quay, no. 12,054. See p. 380 and map 13.

Extension north from North Carolina. Identified by Dr. D. S. Correll.

Spiranthes cernua (L.) L. C. Richard, var. odorata (Nutt.) Correll in Bot. Mus. Lfts. Harvard Univ. viii. 79 (1940). (*S. odorata* (Nutt.) Lindl.). King William County: fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, no. 11,557 (some root-tips budding into new rosettes). Charles City County: fresh tidal marsh along Kittewan Creek, Weyanoke, no. 11,307 (plants up to 7.5 dm. high, completely submerged at high tide). Greensville County: wooded bottomland of Fontaine Creek, southeast of Taylor's Millpond, nos. 10,224 and 11,308 (completely drowned during much of the summer). See pp. 359, 394 and 401.

Ponthieva racemosa (Walt.) Mohr. Local range extended into Southampton County: rich marly woods along Three Creek, northwest of Cary Bridge, no. 11,487. See p. 363.

Hexalectris aphylla (Nutt.) Raf. Local new stations of very limited extent in Dinwiddie County, no. 10,605, and in Southampton County, no. 10,606.

*Carya ovata K. Koch, var. pubescens Sargent. Sussex County: rich deciduous woods along Nottaway River, southwest of Homeville, no. 10,226.

Described by Sargent from South Carolina and Tennessee southward. See p. 361.

*Castanea pumila (L.) Mill., var. Margaretta Ashe. Nansemond County: Dry white sand of pine barrens east of Sandy

Landing, south of South Quay, no. 11,313; similar habitat, southwest of Marsh Hill School, south of South Quay, no. 11,014. SOUTHAMPTON COUNTY: white sand of pine and oak woods north of Point Beach, south of Franklin, no. 11,315.

First records from northeast of western Alabama. Our specimens, having a well developed pale tomentum on the lower leaf-surfaces, belong to the form later called *C. Margaretta* var. *arcuata* Ashe (from Texas). See p. 398.

*CASTANEA PUMILA (L.) Mill., var. ASHEI Sudworth. NANSEMOND COUNTY: sandy and peaty pine barrens east of Cox Landing, south of South Quay, no. 11,310. SOUTHAMPTON COUNTY: sandy woods, southeast of Round Gut, southwest of Franklin, no. 11,309.

Extension north from eastern North Carolina. See p. 398.

QUERCUS PALUSTRIS Muench. SUSSEX COUNTY: by woodland brook northeast of Stony Creek, no. 10,617; border of wooded swamp north of Stony Creek, no. 10,618; wooded bottomland, Three Creek, southwest of Grizzard, no. 10,237.

Although Sargent (Man.) cites the Pin Oak as occurring in Virginia south of the Potomac only in the extreme west (Wythe County), it is characteristic of river-swamps over a considerable area of southern Sussex County. It was reported in Claytonia, i. 44 (1934) from Amelia and Charles City Counties as well as from counties farther in the interior. See p. 361.

Q. LAEVIS Walt. (*Q. Catesbaei* Michx.). NANSEMOND COUNTY: very abundant in the sandy area south of South Quay, many nos. See pp. 362 and 365.

*×Q. BUSHII Sargent (*Q. marilandica* × *velutina*). GREENSVILLE COUNTY: large tree on wooded bottomland by Nottoway River, northeast of Purdy, no. 11,015.

Sargent (Man.) cites × *Q. Bushii* only from Georgia, Florida, Alabama, Mississippi and Oklahoma. The tree near Purdy fruits heavily. See p. 383.

*×Q. SUBINTEGRA Trel. (*Q. cinerea* × *falcata*). NANSEMOND COUNTY: a single large shrub, sandy and peaty barrens, east of Cox Landing, south of South Quay, no. 11,322. SUSSEX COUNTY: dry sandy woods by Nottoway River, below Peters Bridge, southeast of Lumberton, no. 12,320, several individuals. See p. 403.

*HUMULUS SCANDENS (Lour.) Merrill (*H. japonicus* Sieb. & Zucc.). DINWIDDIE COUNTY: becoming abundant by roadsides and in waste places, Petersburg, no. 11,018. See p. 390.

*Rumex Acetosella L., var. integrifolia Wallr. Surry County: roadsides and waste places, Surry Courthouse, no. 10,626. See p. 377.

Very striking, with most of its rosette-leaves slenderly tapering to base and exauriculate. Infrequent in North America.

*Polygonum hydropiperoides Michx., var. **breviciliatum,** var. nov., planta subrobusta; foliis primariis lanceolatis acuminatis subtus scabris 9–13 cm. longis 1.5–3.2 cm. latis; ochreae ciliis perbrevibus 0.8–1.2 mm. longis; ochreolis eciliatis vel ciliis ad 0.4 mm. longis; floribus valde exsertis; achaenio trigono.—Dinwiddie County, Virginia: deep ditch in swale south of Burgess Station, July 16, 1938, *Fernald & Long,* no. 8698, August 15, 1938, no. 9044 (type in Herb. Gray; isotype in Herb. Phil. Acad.).

When he defined the eight geographic varieties of *Polygonum hydropiperoides* in Rhodora, xxviii. 22–28 (1926), Stanford said: "It is highly improbable that varieties recognized in this paper exhaust the list of admissable geographic varieties. Among possible fields for future geographic research, the southern seaboard states below Virginia and those of the lower Mississippi basin, which are not particularly well represented in the material at hand, suggest attractive possibilities." Var. *breviciliatum* is presumably in North Carolina, though as yet we have only the material from Dinwiddie County. It is at once separated from the other eastern American varieties as follows. From typical *P. hydropiperoides* by its coarser habit, broader leaves (1.5–3.2 cm. wide as against 1–1.5 cm.), cilia of the ochreae only 0.8–1.2 (as against 2–4) mm. long, and of the ochreolae wanting or barely 0.4 (as against 0.5–1) mm. long. Var. *psilostachyum* St. John, type from Sable Island, Nova Scotia, has glabrous leaves barely acuminate and only 4.8 cm. broad, eciliate and glabrous ochreae and ochreolae, the latter with broadly open summit; var. *macerum* Stanford, a very slender plant of Florida (only 5–6 dm. high) has leaves barely 6 cm. long and 1 cm. broad, cilia of the ochreae 2–4 mm. long, of the ochreolae 2 mm.; var. *sanibalense* Stanford, also from Florida, is stout, but with elliptic obtuse short leaves, long cilia of ochreae, and ochreolae broadly turbinate. Superficially var. *breviciliatum* closely resembles var. *Bushianum* Stanford of Oklahoma, and var. *asperifolium* Stanford of California. Both

those varieties, however, have the ochreae and ochreolae long-ciliate, the cilia of the ochreae in var. *Bushianum* about 1 cm. long, in var. *asperifolium* 5–6 mm. long. Var. *breviciliatum* can scarcely be forced into any of these recognized varieties.

*Polygonella articulata (L.) Meisn. Nansemond County: dry white sand of pine barrens east and southeast of Cox Landing and east of Sandy Landing, south of South Quay, nos. 10,632, 11,025, 11,562 and 11,563. Isle of Wight County: dry sandy pine barrens and open woods, south of Lee's Mill, no. 12,068.[16] See pp. 379 and 403 and map 23.

A very extensive area, the plants, flowering in mid-October, often reaching a height of 8 dm. Although given a range south to Georgia ("or Fla.") by Small, *Polygonella articulata* is represented in the herbaria of the Academy of Natural Sciences of Philadelphia and the New York Botanical Garden and in the Gray Herbarium by no previous collections from south of northern Worcester County, Maryland, except for an old specimen bearing in Nuttall's hand the indefinite data: "Georgia. Dr. B[aldwin]". Whether it was actually collected in Georgia or whether there was confusion of data is an open question. Baldwin was born in Chester County, Pennsylvania; studied at the University of Pennsylvania; practiced medicine at Wilmington, Delaware, where he married; and, after moving to Georgia, made visits at Wilmington. The specimen which Nuttall had might have been picked in the North, the label being Nuttall's, not Baldwin's. In a letter dated "*Jefferson, November* 27, 1816", Baldwin wrote a friend:

> The distance from our lodgings on the Sand Hills to Fort Barrington, where we crossed the Altamaha, is about seven miles; and from thence to this place, forty one. I have frequently mentioned *Fort Barrington;* but it would puzzle a stranger to find any *Fort,* here. The remains are alone visible, in the midst of a luxuriant vegetation, a short way below the Ferry.
>
> Among the more rare productions of the Sand Hills, we find the *Eriogonum tomentosum, Polygonum articulatum,* and *Stipulicida setacea,* of Michaux;—all of which are found on the middle districts of Georgia, and not on the sea-coast. . . . I suspect, with Pursh, that the *Polygonum articulatum,* and *polygamum,* are merely *varieties.* The one found here, however, has always *flores albi,*—and is frequently more than two feet in height. That the northern plant should be *annual,* and the southern one *perennial,* is by no means extraordinary.[17]

[16] Also in white sand of pine barrens, Wyanoke, Gates County, North Carolina, no. 11,564.

[17] William Baldwin as quoted by Darlington, Reliquiae Baldwinianae, 334 (1843).

The last sentence quoted clearly shows that Baldwin knew as *Polygonum articulatum* (=*Polygonella*) in the Sand Hills of Georgia a white-flowered perennial, not the usually pink-flowered annual, but that he knew the northern plant as an annual (apparently *not* white-flowered). The Georgian source of the Nuttall specimen is not verified by its reputed collector.

*Amaranthus Torreyi (Gray) Benth. Dinwiddie County: roadsides and waste places, Petersburg, no. 10,633.

Native from Iowa to Texas and westward. A colony of vigorous plants, likely to spread. See p. 369.

Iresine rhizomatosa Standley. Range extended farther north in Princess Anne County: low woods and clearings along Back Bay, Long Island, nos. 10,636, 10,637 and 11,028. See pp. 370 and 371.

For discussion see Rhodora, xxxviii. 379 and 416 (1936); and xxxix. 483, map 58 (1937).

*Froelichia gracilis (Hook.) Moq. Dinwiddie County: cinders of freight-yard of Norfolk & Western Railroad, Petersburg, no. 10,639. Sussex County: similar habitat about 2 miles west of Waverly, no. 10,638. Henrico County: waste places and railroad ballast, Richmond, no. 12,338.

A western species (Iowa to Arkansas and southwestward), likely to become more established. See p. 374.

*Paronychia fastigiata (Raf.) Fern., var. paleacea Fern. in Rhodora, xxxviii. 421, pl. 447, figs. 6 and 7 (1936). Sussex County: border of rich deciduous woods along Nottoway River, southwest of Homeville, no. 10,251; white sand of dry woods near Nottoway River, south of Chub, no. 12,340; exsiccated brookbed in alluvial woods, Nottoway River, southeast of Owen's Store, no. 12,341; moist sandy roadside ditch, near Nottoway River, at Green Church Bridge, northwest of Owen's Store, no. 12,342.

First from south of Delaware and Pennsylvania. See p. 361.

*P. riparia Chapm. Dry sands and sandy woods of Isle of Wight, Sussex and Southampton Counties (many numbers).

This is the plant erroneously reported in 1937 as *P. Baldwinii*. I am indebted to Dr. Core for clarifying the identification.

Sesuvium maritimum (Walt.) BSP. To the station (Dam Neck) formerly reported add the following, also in Princess Anne County: open muddy and sandy shores of Back Bay, east of Munden, no. 11,029; east of Creeds, nos. 11,030 and 11,031. See pp. 369 and 387.

*Stellaria media (L.) Cyrill., var. glaberrima G. Beck. Lawns of Greensville and Southampton Counties.

This is the pernicious weed most erroneously reported in Rhodora, xli. 489 and 540 (1939) as the native southern *Stellaria prostrata* Baldwin. The latter is still unknown in Virginia. My apology for the erroneous identification is the lame one, that I accepted the verdict of a student who was making an intensive study of the genus. As I have elsewhere pointed out, the motto of the true scientist unfortunately has to be: "you can trust no one." We sometimes weaken and do so!

Silene noctiflora L. Prince George County: cinders of freight-yard, Norfolk & Western Railroad, east of Petersburg, no. 11,335.

Nuphar fluviatile (Harper) Standley. Range in the state extended eastward to Nansemond County: muddy margin of Blackwater River, Milk Landing, south of South Quay, no. 10,643; seen, forming a definite band of vegetation near the eastern margin of the river, northward to the draw-bridge at South Quay.

Ranunculus flabellaris Raf., forma riparius Fernald in Rhodora, xxxviii. 171 (1936). New Kent County: bottomland woods by Chickahominy River north of Long Bridge, southeast of Quinton, no. 11,336. Sussex County: gum and cypress swamp bordering pond, east of Littleton, no. 12,348. Southampton County: dried-out pools, wooded bottomland, Meherrin River, southeast of Branchville, no. 10,259.

Certainly local in southeastern Virginia.

Our Varieties of Ranunculus bulbosus. In the Northeastern States *Ranunculus bulbosus* L. is a tolerably uniform plant, with the three leaflets of the radical leaves cleft into 2 or 3 divisions, these again with short segments, the petioles and stems silky-villous to glabrate. In southeastern Virginia, however, the species there abundantly naturalized, is much more variable, three fairly definite varieties being recognizable in the field. These were worked out with me several years ago by Mr. Ludlow Griscom but our notes never published. They are here included. Besides the typical form, *R. bulbosus*, var. *typicus* Erdner, we there find var. valdepubens (Jordan) Briq., Fl. Corse, i. 619 (1910), with foliage as in var. *typicus*, but the whole plant strongly spreading-villous, often giving a hoary effect; and var. dissectus Babey, Fl. Jurassienne, i. 39 (1845), with the leaves finely dissected into elongate linear segments.

*Var. VALDEPUBENS in the United States is chiefly in the Southeast and only occasional northward into New York and Rhode Island. We have examined the following specimens. RHODE ISLAND: Cumberland, May 30, 1911, *C. H. Knowlton.* NEW YORK: bank of Mohawk River, east of Crescent, Saratoga Co., May 30, 1906, *S. H. Burnham.* VIRGINIA: Buckroe, May 18, 1912, *Robinson*, no. 302; near Norfolk, April 23, 1911, *Tidestrom*, no. 4495: roadside east of Little Creek, Princess Anne Co., *Fernald & Griscom*, no. 4402; cinders of freight-yard of Atlantic Coast Line Railroad, Petersburg, no. 12,076.

*Var. DISSECTUS is more generally dispersed, but apparently local: MAINE: Somesville, Mt. Desert Isl., June 15, 1928, *G. L. Stebbins, Jr.* MASSACHUSETTS: near Spring Pond, Peabody, June 11, 1896, *J. H. Sears;* Beaver Hill, Middlesex Fells Reserv., June 9, 1920, *N. T. Kidder;* Blue Hills Reserv., June 10, 1920, *N. T. Kidder.* RHODE ISLAND: Nayatt, Barrington, May 30, 1911, *M. L. Fernald;* Middletown, May 31, 1908, *E. F. Williams.* NEW YORK: Inwood, New York City, May 14, 1887, *Mrs. L. M. Parker;* Ledyard, Cayuga Co., *Wiegand*, no. 6449. VIRGINIA: Campbell, Bedford Co., May 14, 1871, *A. H. Curtiss;* near Blackwater River, Princess Anne Co., *Fernald & Griscom*, no. 4401. MICHIGAN: Agricultural College, May 23, 1894, *C. F. Wheeler.*

SASSAFRAS ALBIDUM (Nutt.) Nees. GREENSVILLE, SOUTHAMPTON, SUSSEX and NANSEMOND Counties (many nos.).

The typical form of the species, with glabrous branchlets and leaves; often more abundant than the pubescent extreme.

*RORIPPA SESSILIFLORA (Nutt.) Hitch. HENRICO COUNTY: James River, Richmond, May 11, 1894, *J. R. Churchill.*

A characteristic species of the Mississippi Valley.

ARABIS CANADENSIS L. SUSSEX COUNTY: rich deciduous woods along Nottoway River, southwest of Homeville, no. 10,272.

Our first station on the Coastal Plain. See p. 361.

DROSERA ROTUNDIFOLIA L. NANSEMOND COUNTY: swampy depressions in pine barrens south of Cox Landing, south of South Quay, no. 10,663; sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 10,662. Seen some years ago in ISLE OF WIGHT COUNTY: in sphagnum near Joyner's Bridge.

It is a striking fact that the only stations we know on the Coastal Plain (south of the James) for *Drosera rotundifolia* are near the eastern border of the Blackwater River.

D. INTERMEDIA Hayne. NANSEMOND COUNTY: sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 10,664.

Very local in southeastern Virginia: frequent in Princess Anne County but rare on the Coastal Plain farther west.

*Sedum alboroseum Baker. Greensville County: naturalized in roadside thicket near Dahlia, no. 9575.

*Hamamelis virginiana L., var. parvifolia Nutt. See Fernald in Rhodora, xxiii. 265 (1921). Nansemond County: depressions in the pine barrens south of South Quay, several stations, nos. 10,666, 10,667, 11,339 and 11,570. Isle of Wight County: peaty and sandy thicket in pine barrens south of Lee's Mill, nos. 12,358 and 12,359. Suffolk County: dry woods of a "hammock", Great Dismal Swamp, west of Yadkin, no. 11,041 (transitional). Southampton County: sandy woods southeast of Round Gut, southwest of Franklin, no. 11,340; swampy woods west of Wiggins School, south of Franklin, no. 11,341.

Much of the material has the lower surfaces of the leaves strongly whitened but I am unable to separate it on any character (including seeds) from the thick-leaved shrub of Nova Scotia and New England with densely pubescent lower leaf-surfaces. Torrey & Gray, taking up Nuttall's variety, cited it from the mountains of Pennsylvania and from Louisiana. There has been no material in the Gray Herbarium from south of Nova Scotia, Maine and Massachusetts, where the lower surfaces are often, but not always, rufescent; but Mr. Long sends me for study the Pennsylvania material at the Philadelphia Academy. This consists of Nuttall's type from "mts., Penn", and characteristic specimens from Pocono (*Wolle*) and from Sand Patch, alt. 2500 feet, "summit of Allegheny Mts.", Somerset County (*C. F. Saunders*). See p. 380.

Gillenia trifoliata (L.) Moench. Sussex County: dry sandy hickory and oak woods, Burt, no. 11,042.

Our only Coastal Plain station.

*Potentilla intermedia L. Surry County: roadsides and waste places, Surry Courthouse, no. 10,676. See p. 377.

*Rubus geniculatus Kalt. Princess Anne County: extensively trailing, waste ground at old railroad terminal, Munden, no. 10,674. Dinwiddie County: roadsides and waste places, Petersburg, no. 10,673.

One of the sprawling and climbing European species.

R. Grimesii Bailey. Local range extended southward. Sussex County: rich deciduous woods along Nottoway River, southwest of Homeville, no. 10,287. Greensville County: open

thickets, clearings and borders of woods east of Emporia, no. 10,291.

*R. Janssonii Bailey. Sussex County: wet woods, Assamoosick Swamp, about 2 miles northeast of Homeville, no. 10,286.

I am unable to find any points to separate this from the trailer of southern New England. See p. 361.

*Rubus (Eubatus, § Tholiformes) **pernagaeus,** sp. nov. (tab. 633 et 634), arcuans, cannis simplicibus 6–7 dm. longis apice radicantibus; primocannis 2–3.5 mm. diametro subteretibus viridibus glabris sparse setosis setis aculiformibus, deinde uncinatis; primocannae foliis ternatis subquinatis, immaturis supra strigoso-pilosis subtus subvelutinis; foliolis terminalibus cuneato-obovatis 2.7–3.2 cm. longis argute duplicato-serratis sublobatis; floricannae foliis ternatis foliolis anguste cuneato-obovatis, ramorum sterilium foliolis 1.5–3.5 cm. longis; ramorum floriferum foliolis terminalibus vel foliis simplicibus 1.5–2.5 cm. longis; corymbis 1–3-floris; pedicellis laxe adscendentibus 1–2 cm. longis valde glandulosis plerumque bracteolatis; calycibus glandulosis lobis late ovatis 4 mm. longis deinde reflexis; petalis roseotinctis 6–8 mm. longis 4 mm. latis; fructibus ignotis.—Isle of Wight County, Virginia: roadside thicket near Smithfield, April 5, 1938, *Fernald & Long*, no. 7879, distributed erroneously as *R. pauxillus* Bailey.

Rubus pernagaeus (of the land of ham, Smithfield hams, from peanut-fattened hogs, having a reputation which has extended far from Virginia) was placed under *R. pauxillus* as a simple but quite unsatisfactory means of getting the specimens roughly identified. *R. pauxillus*, characterized by Bailey as "Littlest of the upright blackberries in the United States", is stiff and erect (instead of arching and tip-rooting) and belongs in § *Arguti* Rydb. It has the primocane-leaflets ovate (instead of narrowly cuneate-obovate); its floricane-leaflets, likewise, broadly ovate (instead of narrowly cuneate-obovate); "pedicels pubescent and sometimes with a few glandular hairs" (in *R. pernagaeus* copiously glandular); calyx apparently glandless, and petals much longer. *R. pernagaeus* in some ways resembles members of § *Procumbentes*, though the canes are more arching and less prostrate than in theoretically characteristic members of the *Procumbentes*. Its tiny corymb of 1–3 flowers is suggestive of that section, but I am unable to place it with any described member of that group. *R. Enslenii* Tratt. sometimes has glandular

Photo. H. G. Fernald.

RUBUS PERNAGAEUS: FIG. 1, floricane and tip of primocane, × 1; FIG. 2, bud and reflexed calyx-lobes, × 5.

Photo. H. G. Fernald.

RUBUS PERNAGAEUS: FIG. 1, floricane, × 1; FIG. 2, tip of primocane, × 1.

pedicels and calyx, but the very short pedicels and small pink flowers and the cuneate primocane-leaflets of *R. pernagaeus* keep it apart from *R. Enslenii*. *R. centralis* Bailey (type from southern Indiana) has glandular pedicels, but the plant is trailing, the primocanes branching, the terminal primocane-leaflets "broadly subcordate-ovate", the floricane-foliage similar, and the calyx-lobes ascend in fruit.

*Sanguisorba minor Scop. Dinwiddie County: dry field about 5 miles east of Burgess Station, no. 11,043. See p. 390.

*Cassia fasciculata Michx., forma Jenseni Palmer & Steyermark. Sussex County: sandy pine and oak woods south of Stony Creek, no. 11,348.

An albino.

*Cassia fasciculata Michx., var. **macrosperma,** var. nov. (tab. 635, fig. 1 et 2), planta 1–1.7 m. alta; caule ramisque piloso-hirsutis vel glabratis; pedicellis hirsutis; leguminibus plerumque 4–8.5 cm. longis 5–10 mm. latis strigosis vel glabratis, suturis hirsutis, segmentis 5.5–7 mm. latis; seminibus 4–10, oblique rhomboideo-ovatis valde rostratis plerumque 5.5–7.5 mm. longis 4–6 mm. latis.—Fresh tidal marshes and shores, southeastern Virginia: sandy tidal shore of James River, at "Four Oaks", below Harrison Point, Charles City County, September 16, 1939, *Fernald & Long,* no. 11,349; fresh tidal marsh along Kittewan Creek, Weyanoke, Charles City County, September 18, 1939, *Fernald & Long,* no. 11,350 (type in Gray Herb.; isotype in Herb. Phil. Acad.), October 14, 1939, no. 11,573 (fully ripe legumes); fresh tidal marsh of Chickahominy River, below Barrat's Bridge (or Ferry), James City County, September 19, 1939, no. 11,351 (flowering material); fresh tidal marsh of Pamunkey River, southeast of White House, New Kent County, October 14, 1939, no. 11,574 (fully ripe); fresh tidal shore of Mattaponi River at Horse Landing, near King William Courthouse, King William County, October 14, 1939, no. 11,575 (legumes rather small); fresh tidal shore of Mattaponi River, Walkerton, King and Queen County, October 16, 1939, no. 11,576 (ripe). See pp. 393, 394 and 400.

Cassia fasciculata, var. *macrosperma* is remarkable for its great stature and large legumes and seeds; it is also noteworthy for its apparent restriction to the tidal reaches of the rivers and creeks, partially or wholly submersed at high tide, partially emersed at low tide. It thus forms a characteristic element in the estuarine flora of the region.

Typical *C. fasciculata* (*C. Chamaecrista* of authors, not L.) is mostly much lower (1.5–9 dm. high), with minute appressed pubescence, the legumes (FIG. 3) 2.5–5 cm. long and 4–5.5 mm. broad, with segments 3–4.5 mm. broad, the 4–13 seeds (FIG. 4) 3.5–5 mm. long and 2.5–4 mm. broad. Var. *robusta* (Pollard) Macbride, chiefly of the Mississippi drainage, differs from typical *C. fasciculata* primarily in being more spreading-pubescent; its legumes (FIG. 5) and seeds are not conspicuously larger.

PLATE 635, FIG. 1, shows portions of the TYPE, × 1, of *Cassia fasciculata*, var. *macrosperma;* FIG. 2, seeds, × 3, from the TYPE. FIG. 3 is ripe fruits, × 1, of typical *C. fasciculata* from west of White Bluffs, Dickson County, Tennessee, *Svenson,* no. 4403; FIG. 4, seeds, × 3, of *C. fasciculata* from New Castle, Delaware, *Benner,* no. 8584; FIG. 5, fruits, × 1, of var. *robusta* from Auburn, Alabama, *Earle & Earle,* no. 30.

*TRIFOLIUM PRATENSE L., forma PILOSUM (Griseb.) Hayek. GREENSVILLE COUNTY: open thickets, clearings and borders of woods east of Emporia, no. 11,051.

An extremely long-pilose form.

*MEDICAGO LUPULINA L., var. GLANDULOSA Neilr. PRINCE GEORGE COUNTY: cinders of freight-yard, Norfolk & Western Railroad, east of Petersburg, no. 11,352.

*TEPHROSIA SPICATA (Walt.) T. & G., var. **semitonsa,** var. nov., caulibus sparse piloso-hirsutis; rhachibus subglabris, foliolis supra glabris vel glabratis; leguminibus sparse strigoso-pilosis. VIRGINIA: Southampton County: white sand of pine and oak woods at Round Gut, southwest of Franklin, September 20, 1939, *Fernald & Long,* no. 11,353, plants stiffly erect (TYPE in Herb. Gray; ISOTYPE in Herb. Phil. Acad.). Nansemond County: dry sandy woods and adjacent clearings, Kilby, September 11, 1935, *Fernald, Long & Fogg,* no. 4892; dry sandy woods, Factory Hill, August 26, 1936, *Fernald & Long,* no. 6612. Isle of Wight County: dry sandy yellow pine and oak woods near Walters, July 28, 1936, *Fernald & Long,* no. 6235; dry sandy pine woods south of Zuni, August 24, 1936, *Fernald & Long,* no. 6611; white sand of dry woods and clearings east of Joyner's Bridge, July 17, 1940, *Fernald & Long,* no. 12,379. See p. 398.

There are two strongly marked varieties of *Tephrosia spicata* in southeastern Virginia. Assuming that the identification by Torrey & Gray of Walter's *Galega spicata* was correct and that the subsequent identifications of Small, Rydberg and others (as *Tephrosia* or as *Cracca*) are correct, typical *T. spicata* is the densely villous extreme extending from Florida to Louisiana and north to Tennessee and Delaware. It is common in southeastern

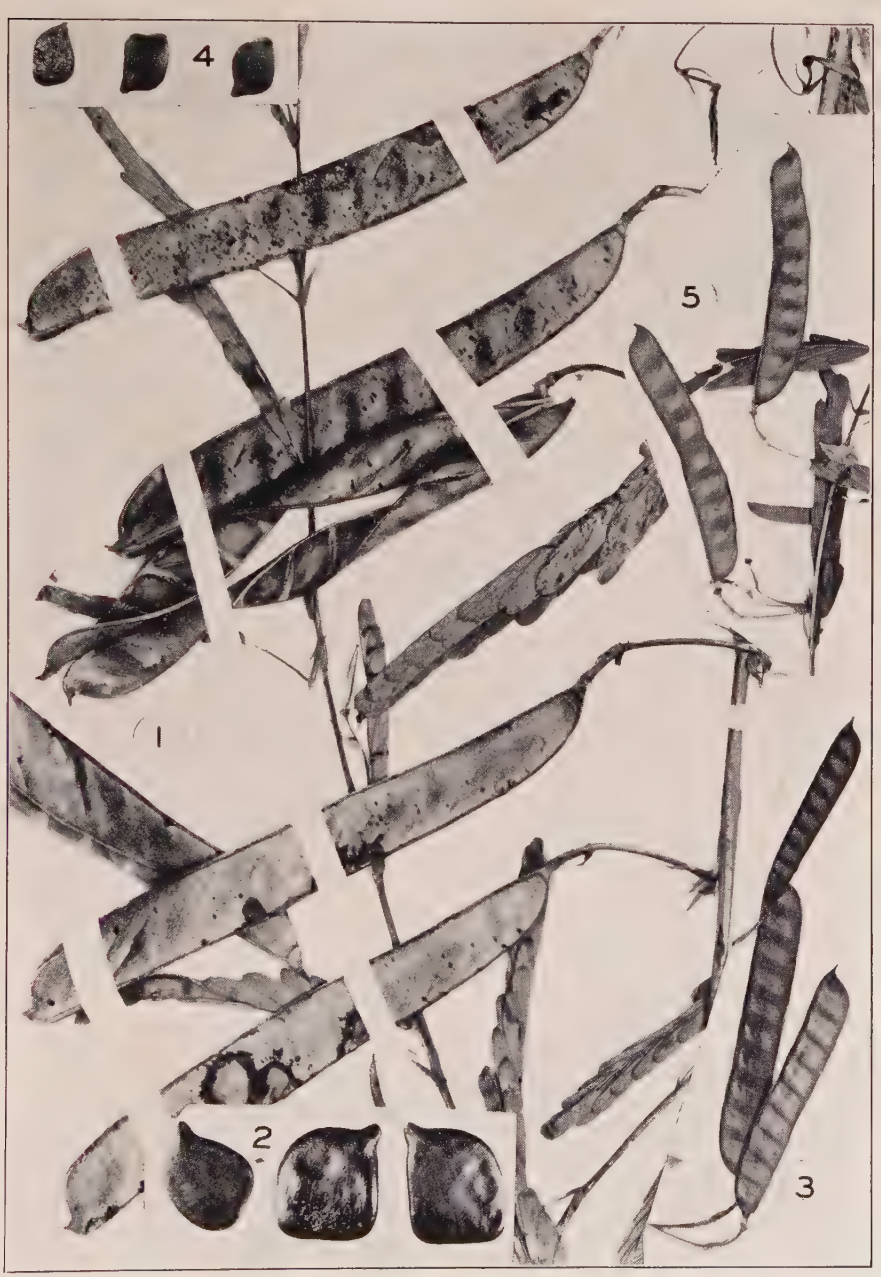

Photo. W. H. Hodge.

CASSIA FASCICULATA: FIG. 3, fruits, × 1, from Tennessee; FIG. 4, seeds, × 3, from Delaware.

VAR. MACROSPERMA: FIG. 1, portions of TYPE, × 1; FIG. 2, seeds, × 3, of TYPE.

VAR. ROBUSTA: FIG. 5, fruits, × 1, from Alabama.

Photo. H. G. Fernald.

VITIS LABRUSCA: FIG. 1, portion of TYPE, × 1, in Linnean Herbarium; FIGS. 2–4, leaf-margin, × 1; FIG. 5, pubescence of lower leaf-surface, × 10.

Virginia, extending northward at least to Princess Anne and York Counties. In view of the fact that many segregates have been made from the traditional *T. spicata,* it is highly important carefully to check the type of *Galega spicata* Walt. Fl. Carol. 188 (1788) which had the wholly inconclusive diagnosis "Spicis longis terminalibus." That simple character belongs to several southern species.

From its sparse pubescence extreme plants of *Tephrosia spicata,* var. *semitonsa* might be mistaken for *T. hispidula* (Michx). Pers., which is known from Virginia only through very old specimens without definite data. Although Small (Man.) separates *T. hispidula* (as *Cracca hispidula*) by "Pubescence of the stem of appressed hairs" and Rydberg (in N. Am. Fl.) says "stem . . . sparingly strigose or glabrate", the type of *Galega hispidula* Michx. (as shown by a photograph) has some spreading hairs; so has the specimen from Virginia (old specimen of Torrey & Gray; Michaux said "in Virginia, Carolina et Georgia") and some from South Carolina, Georgia and Florida. The clearest distinctions between *T. hispidula* and *T. spicata,* var. *semitonsa* are as follows:

T. HISPIDULA. Stem, rachis and petiolules strigose-hispid; principal leaflets lanceolate, lance-oblong or oblanceolate, strigose-sericeous beneath; pedicels filiform; upper calyx-lobes deltoid-lanceolate, 1.5–3 mm. long.

T. SPICATA, var. SEMITONSA. Stem, rachis and petiolules spreading-pilose or -villous; principal leaflets oblong-obovate, appressed-pilose beneath; pedicels stout; upper calyx-lobes lance-subulate, 2.5–3.5 mm. long.

AESCHYNOMENE VIRGINICA (L.) BSP. To the stations recorded in 1939 add others (often very extensive) on fresh tidal shores in KING WILLIAM, NEW KENT, CHARLES CITY and JAMES CITY Counties (many nos.). See pp. 385, 391, 393, 394, 400 and 402.

*DESMODIUM GLABELLUM (Michx.) DC. NANSEMOND COUNTY: white sand of pine and oak woods and clearings near Cathole Landing, west of Factory Hill, no. 11,356.

A close match for the type of Michaux from South Carolina, our material and a fragment and photograph of Michaux's type being the only representatives of the species I have seen. The more northern and larger-leaved plant passing as *Desmodium glabellum* is *D. humifusum* Beck. See p. 399.

*LESPEDEZA ANGUSTIFOLIA (Pursh) Ell., forma **subvelutina,** f. nov., caulibus calycibusque densissime subvelutino-pilosis, pilis subpatentibus; foliolis subtus dense subadpresso-pilosis.—

With typical *L. angustifolia* or by itself, southern New Jersey to North Carolina. New Jersey: sand, Cold Spring, Cape May County, August 30, 1917, *Gershoy*, no. 386, distrib. as *L. angustifolia* × *capitata;* dry soil, Bennett, Cape May County, August 8, 1925, *H. E. Stone*, distrib. as *L. oblongifolia.* Virginia: sphagnous bog about 1 mile northwest of Dahlia, Greensville County, August 20, 1938, *Fernald & Long*, no. 9077 (type in Herb. Gray; isotype in Herb. Phil. Acad.), growing mixed with typical *L. angustifolia;* sphagnous swale at head of north fork of Mill Swamp, south of Emporia, August 18, 1939, *Fernald & Long*, no. 11,060. North Carolina: Bladensboro, September 3, 1908, *Eggleston*, no. 4043, in part (mixed with typical *L. angustifolia*).

*Strophostyles umbellata (Muhl.) Britton, forma **ochroleuca,** forma nov., floribus ochroleucis. Greensville County, Virginia: open thickets, clearings and borders of woods east of Emporia, August 18, 1939, *Fernald & Long*, no. 11,065 (type in Herb. Gray, isotype in Herb. Phil. Acad.)

*Geranium dissectum L. James City County: cultivated field, 1 mile south of Williamsburg, *Grimes*, no. 3469 (reported as *G. carolinianum*). Southampton County: roadside, Boykins, no. 10,310.

Decidedly unusual in the Atlantic States. The only other material from the East in the Gray Herbarium is from Athens, Georgia, but it is included in the *Flora of the District of Columbia* from College Park, Maryland. The species is widely dispersed on the Pacific slope from southern British Columbia to California.

*Polygala polygama Walt. Southampton County: dry sandy pine woods near Nottoway River, above Carey Bridge, no. 10,311; border of dry mixed woods by Applewhite's Church, no. 10,312; rich wooded slopes and clearings by Three Creek, north of Applewhite's Church, no. 12,122. See p. 362.

We have never before met *Polygala polygama* on the Coastal Plain of Virginia, nor is it represented in the Gray Herbarium from between Montgomery County, Maryland (Great Falls and vicinity) and South Carolina. Wheelock in his monograph (Mem. Tor. Bot. Cl. ii. 140) cited nothing from Virginia and North Carolina. Our material is the true southern *Polygala polygama* of Walter, with very loose racemes, the flowers 4–6 mm. apart, 5–6 mm. long, on pedicels 1.5–3.5 mm. long, with the obovate wings much exceeding the capsule. The plant of Great Falls belongs to the wider-ranging and mostly northern var.

obtusata Chodat, with closer-flowered raceme, the flowers 1–4 mm. apart, 3–5(–6) mm. long, on pedicels 0.5–2 mm. apart, the wings strongly rounded above and shorter than to exceeding the capsule. The latter extends northward to Nova Scotia, central Maine, central New Hampshire, Vermont, New York, southern Ontario, Michigan, Wisconsin and Minnesota. I have seen typical *P. polygama* only from Florida, Georgia, South Carolina and southeastern Virginia.

POLYGALA VERTICILLATA L. To the station in Greensville County, noted in 1938, add one in SOUTHAMPTON COUNTY: argillaceous clearing near Blackwater River, southeast of Ivor, no. 10,700.

In RHODORA, xl. 337, pl. 501 (1938), I held as true *Polygala verticillata* the plant which Linnaeus actually had in his own herbarium prior to 1753 and which closely matches his diagnosis and notes; but Pennell still urges[18] (if I understand his long argument) that the species could as well rest on earlier specimens and concepts not so clearly identifiable as familiar to Linnaeus. If our identifications of the vague and mostly too inclusive American species of Linnaeus are to be determined by psychoanalysis of what one supposes Linnaeus to have thought, or by the specimens less known to him and least matching his mature notes, rather than by the specimens actually before him in preparing *Species Plantarum* and which better match his original diagnoses and notes, we might as well give up. Different psychoanalysts and interpreters of the vague past rarely draw identical conclusions from identical data. Similarly, no two modern botanists are likely to agree as to just what passed in the brain of Linnaeus a couple of centuries ago. Interpretation of his species is difficult enough even when the inadequate specimens before him are studied. Whenever possible we should rest our conclusions on the clearest, rather than the vaguest evidence.

P. VERTICILLATA, var. ISOCYCLA Fern. To the few recorded stations add the following. SUSSEX COUNTY: rich woods and bushy clearing just east of the "fall-line" along Nottoway River, Double Bridge, about 6 miles northwest of Jarratt, no. 11,070; dry old field and border of woods, near Nottoway River, southeast of Stony Creek, no. 12,392. SOUTHAMPTON COUNTY: wooded bottomland, Meherrin River, southeast of Branchville, no. 10,313.

[18] Pennell in RHODORA, xli. 378–384 (1939).

P. VERTICILLATA, var. AMBIGUA (Nutt.) Wood. To the stations recorded in 1938 add the following. SUSSEX COUNTY: border of wooded swamp north of Stony Creek, no. 10,701.

In the article above cited I referred to *Polygala verticillata* as a polymorphous species. Experience with it in the field for more than 50 years makes this polymorphism quite evident to me; and Mr. Long's and my experiences in the field in eastern Virginia and elsewhere show that the separation of adjacent colonies into varieties (to say nothing of "species") is somewhat arbitrary. Plants referable to var. *ambigua* can often be separated from others called true *P. verticillata* only by a careful consideration of the degree to which intergradation can be discounted. It is, therefore, surprising to find Pennell, in his discussion of 1939, saying "These three species in constancy of characters, lack of intergradation, and differing areas of occurrence seem to me amply distinct specifically. After a long probation *Polygala ambigua* is now generally so recognized" (p. 378). The surprise is not that Pennell considers them three species; it is at the statement that "*Polygala ambigua* is now generally so recognized" [as "amply distinct specifically"] for this implies a universality of judgment which is hardly consistent with recent practice. It is true that authors immediately following Nuttall and with inadequate material so treated it. It is also, as would be expected, true that it is maintained by Britton and Small, as well as by Pennell. But it will be admitted that all of these authors have viewed the genus from a somewhat local standpoint. It may be equally said that, in his Manual, Asa Gray was viewing the genus locally, but by his 3d edition (1862) he had become skeptical, saying of *P. ambigua* "nearly as in No. 9 [*P. verticillata*] (of which it is probably a mere variety)" and later on he flatly so treated it. Chodat's *Monographia Polygalacearum* (1891) can hardly be called a provincial treatment. Chodat viewed all the known species of the world; yet he saw nothing specific about the characters of *P. ambigua*. He treated it as *P. verticillata*, var. *ambigua*. Similarly Blake's monograph of all the species of *Polygala* in North America is broad-gauge in its specific concept and area; yet here (N. Am. Fl. xxv[5]. 348) *P. ambigua* is treated only as a variety of *P. verticillata*. The counting up of specialists to make a total by

whom *P. ambigua* is generally recognized as a species is subject to the factors which affect many other statistics. Since my own experiences have abundantly shown me that *P. ambigua* and *P. verticillata* frequently intergrade, I do not find myself in the "general" group referred to by Pennell, which excluded Asa Gray (in his more mature years), Chodat and Blake.

*Acalypha ostryaefolia Riddell. Dinwiddie County: steep weedy bank by freight-yard of Norfolk & Western Railroad, Petersburg, no. 10,703.

Although stated to occur from New Jersey to Florida and westward, there is no other material in the Gray Herbarium from the Atlantic states north of South Carolina. *Acalypha caroliniana* Ell., not Walt., is referred to *A. ostryaefolia*. Elliott knew it only from Paris (or Parris) Island in Beaufort County, South Carolina "in cultivated land . . . very rare". Messrs. Godfrey and Tryon found it as a weed about Georgetown, South Carolina, in 1939. See p. 369.

Euphorbia polygonifolia L. New Kent County: sandy beach of York River, near mouth of Fillbate's Creek, north of Holly Forks, no. 11,584.

Inland extension from the sandy coast. See p. 400.

E. prostrata Ait. Dinwiddie County: cinders of freight-yard of Norfolk & Western Railroad, Petersburg, no. 10,704; roadsides and waste places, Petersburg, no. 11,367.

Previously found, as a street-weed in Williamsburg, by Grimes. See p. 369.

E. dentata Michx. Prince George County: cinders of freight-yard, Norfolk & Western R. R., east of Petersburg, no. 11,366. Henrico County: waste places and railroad ballast, Richmond, no. 12,393.

*E. heterophylla L. Dinwiddie County: roadsides and waste places, Petersburg, no. 11,072.

Not previously represented in the Gray Herbarium from north of South Carolina. See p. 390.

Ilex coriacea (Pursh) Chapm. Nansemond County: wet woods near lumber camp of Camp Lumber Co., Great Dismal Swamp, southeast of Whitemarsh School, nos. 10,718 and 11,587.

Shrubs up to 3 m. high. The black drupes become pulpy and juicy when ripe and promptly drop. Branches heavily loaded

with young drupes in July had lost all but a few lingering ripe ones in October—an unusual character in the genus and one which has not been emphasized. See pp. 368 and 400.

*Ceanothus americanus L., var. intermedius (Pursh) Trel. Southampton County: dry sand, pine barrens about 7 miles south of Franklin, no. 7527. Nansemond County: white sand of pine and oak woods and clearings near Cathole Landing, west of Factory Hill, nos. 11,370 and 12,130.

Characteristic of these dry white sands. Trelease, in Gray's Synoptical Flora, gave the range: "Tennessee . . . and S. Carolina . . . to Louisiana . . . and Florida". Small (Man.) gives it, as *C. intermedius*, the range, "Fla. to La., Tenn. and Ga." Although extending northward into the pinelands of southeastern Virginia and well known on the sands of Middle Cape Cod,[10] var. *intermedius* seems to be lacking between Virginia and southeastern Massachusetts.

Ampelopsis arborea (L.) Koehne. To the very few known stations in eastern Virginia add the following. Southampton County: rich sandy and loamy woods along Three Creek, northwest of Carey Bridge, no. 10,327. Isle of Wight County: waste ground, near Lee's Mill, no. 12,407. Princess Anne County: damp sandy woods, Cedar Island, no. 12,406.

*Vitis Labrusca L., var. **subedentata,** var. nov. (tab. 637), foliis subtus densissime pannosis vix sublanatis, marginibus subedentatis humeris plerumque latis vix elongatis.—Coastal Plain, southeastern New York to Virginia. New York: Fisher's Island, August 10–15, 1920, *St. John*, no. 2811. New Jersey: roadside along creek, Turnersville, Gloucester Co., June 24, 1922, *R. R. Dreisbach*, no. 2,105; moist places, Pleasantville, October 7, 1923, *Tidestrom*, no. 11,398. Maryland: along canal, Chesapeake City, August 2, 1923, *Tidestrom*, no. 11,548. Virginia: swampy thicket southeast of Charles City, Charles City County, August 22, 1939, *Fernald & Long*, no. 11,074 (type in Herb. Gray); border of gum swamp, west of Pungo, Princess Anne County, May 6, 1935, *Fernald & Griscom*, no. 4454; wet peaty clearings in woods of *Pinus serotina*, south of Grassfield, Norfolk County, August 4 and 5, 1934, *Fernald & Long*, no. 4027; border of swampy thicket near Cornland, Norfolk County, June 18, 1935, *Fernald, Griscom & Long*, no. 4669; moist thicket about 5 miles east of Burgess Station, Dinwiddie County, August 26, 1939, *Fernald & Long*, no. 11,075; roadside bordering swampy woods, north of Whitemarsh School, Nansemond County, August 20, 1939, *Fernald & Long*, no. 11,073. See p. 390.

[10] Fernald, *The Cape Cod Ceanothus*, Rhodora, xxxii. 161 (1930).

Typical *Vitis Labrusca*, as shown by the Linnean type (PLATE 636, FIG. 1) is the wide-ranging vine with leaf-margin coarsely dentate and with more or less porrect lobes or shoulders on the fruiting portions of the branches. This is the common form from Maine to southern Michigan, south (southward chiefly in the Piedmont and mountains, though reaching the Coastal Plain in South Carolina) to Georgia and Tennessee. The dense blanket of pubescence is relatively loose, the tangled hairs often distinctly showing under slight magnification (PLATE 636, FIG. 5). The Coastal Plain var. *subedentata* has the margins of leaves accompanying inflorescences with only obsolescent teeth, the subuli at the ends of the stronger veins relatively short, the shoulders usually poorly developed and rounded or broad and subhorizontal, and the dense felt of the lower surface very close and fine, its component hairs scarcely discernible under slight magnification (PLATE 637, FIG. 3). In fact the lower surface glistens as if varnished and in pressing it leaves a heavy brown varnish-like stain on the specimen-sheets. In Virginia var. *subedentata* matures and drops its fruit by late August.

PLATE 636 shows, as FIG. 1, a portion of the TYPE, × 1, of *Vitis Labrusca*, from a photograph received from Mr. Savage. FIGS. 2–4 are leaf-margins, × 1, from different specimens: FIG. 2 from Bedford County, Virginia, May 20, 1871, *A. H. Curtiss;* FIG. 3 from Chilmark, Martha's Vineyard, Massachusetts, *Inez P. Mayhew;* FIG. 4, from Granville, Massachusetts, *F. C. Seymour*, no. 303. FIG. 5 shows the pubescence of the lower surface, × 10, of a mature leaf from Milton, Massachusetts, *C. E. Faxon.*

In PLATE 637, FIG. 1 is a portion of the TYPE, × 1, of var. *subedentata.* FIG. 2 is a leaf, × 1, from Chesapeake City, Maryland, *Tidestrom*, no. 11,548; FIG. 3, pubescence of lower surface, × 10, from the TYPE.

*SIDA **inflexa,** sp. nov. (TAB. 638, et TAB. 639, FIG. 1–3), perennis; caule minute stellato-puberulo 0.6–1.2 m. alto, ramis laxe adscendentibus; foliis lanceolato- vel lineari-oblongis breviter petiolatis, primariis 2.5–6 cm. longis, 0.4–2 cm. latis pagina superiore viridi sparsissime stellato-strigosa vel glabrata pagina inferiore pallida remote stellato-puberula, margine adpresso-serratis vel porrecto-dentatis; floribus plerumque corymbosis terminalibus et ad ramorum apices vel rare axillaribus pedunculis ad 1.7 cm. longis; calycibus 6–10 mm. longis basi plus minusve villoso-hirsutis, lobis deltoideo-acuminatis; petalis late obovatis inaequaliter obcordatis 1.5 cm. longis flavescentibus basin versus valde striatis; carpellis ca. 10, apice valde inflexis, maturis 3–3.5 mm. altis horizontaliter costato-reticulatis dorso viridibus hispidisque apice valde incurvatis plus minusve bidentatis, dentibus brevibus adscendentibus.—Southeastern Virginia, west-central Tennessee,

Alabama and southeastern Missouri. VIRGINIA: Petersburg, Dinwiddie County, *Tuomey;* dry pine woods just east of the "fall-line", along Nottoway River, Double Bridge, about 6 miles northwest of Jarratt, Sussex County, August 18 and September 21, 1939, *Fernald & Long,* nos. 11,076 and 11,372; border of sandy woods near Three Creek, northwest of Carey Bridge, Southampton County, August 19, 1939, *Fernald & Long,* no. 11,077, September 23, 1939, *Fernald & Long,* no. 11,373 (TYPE in Gray Herb.; ISOTYPE in Herb. Phil. Acad.). TENNESSEE: cedar barrens, Lavergne, Rutherford County, May and September, 1882, *Gattinger.* ALABAMA: locality not stated, *Buckley.* MISSOURI: Stoddard County, September 12, 1893, *Bush,* no. 5; sands, Campbell (Stoddard County), September 9, 1910, *Bush,* nos. 6293 and 6293A.

Sida inflexa has been passing as *S. Elliottii* Torr. & Gray (see p. 382). That species rests primarily upon *S. gracilis* Ell. Sk. i. 159 (1816), not Richard. It was beautifully described by Elliott, from "the Sea Islands. Common about Beaufort" with "Stem . . . glabrous; leaves linear . . .; peduncles solitary, axillary . . .; capsules (10) two horned, glabrous." It is the very narrow-leaved plant occurring from southeastern South Carolina to southern Florida and Alabama, with nearly glabrous (often bushy-branched) stems 1.5–8 dm. high; linear cauline leaves mostly 1.5–5 cm. long and 1.5–7 mm. broad; flowers mostly solitary in the axils and on peduncles up to 2.5 cm. long; calyx at most strigose on the ribs at base; carpels (PLATE 639, FIG. 4) with prominent erect teeth, glabrous or nearly so on the back and with relatively weak cross-ribs on the sides.

Sida inflexa is also related to the nearly glabrous *S. rubro-marginata* Nash in Bull. Torr. Bot. Cl. xxiii. 102 (1896) of Florida. In foliage the two are similar, but with quite different toothing. *S. inflexa* has the flowers chiefly in terminal corymbs, *S. rubro-marginata* axillary. *S. inflexa* has the calyx (PL. 638, FIG. 4) villous-hirsute on the ribs at base, *S. rubro-marginata* (PL. 639, FIG. 5) not; and the long erect teeth and quite different reticulation of the carpels (PL. 639, FIG. 6) of the latter species show that *S. inflexa* can hardly be forced into it, even by those most modern of young taxonomists who are so frequently maintaining that characters of the carpels, achenes and spores are unimportant as compared with shape of the foliage.

Photo. H. G. Fernald.

VITIS LABRUSCA, var. SUBEDENTATA: FIG. 1, portion of TYPE, × 1; FIG. 2, leaf from Maryland; FIG. 3, lower surface of leaf, × 10, from TYPE.

Photo. W. H. Hodge.

SIDA INFLEXA: FIG. 1, TYPE, × 2/5; FIG. 2, portion of stem, × 10, from TYPE; FIG. 3, lower surface of leaf, × 10, from TYPE; FIG. 4, calyx, × 4, from the side, from TYPE; FIG. 5, ring of carpels, × 4, from above, from TYPE.

Sida inflexa is also somewhat related to *S. neo-mexicana* Gray and to *S. Lindheimeri* Engelm. & Gray, especially in its stellate-puberulent stems. *S. neo-mexicana,* however, is a lower plant, with cinereous lower leaf-surfaces and calyx, the latter much lower than in *S. inflexa,* the petals short, and the muticous carpels (PL. 639, FIG. 7) without the transverse ribs which are so prominent in *S. inflexa. S. Lindheimeri* has the flowers chiefly on long axillary peduncles, the very large calyx cinereous, the carpels (PL. 639, FIG. 8) with erect cinereous teeth and with obliquely ascending elongate reticulation. *S. inflexa* in its less cinereous pubescence, its terminal corymbs, villous-hirsute base of calyx, and horizontally costate carpels with short (or no) hispid teeth is quite distinct from either *S. neo-mexicana* or *S. Lindheimeri.*

It is noteworthy that all these species have at one time or another been included under *Sida Elliottii.* The old specimen of *S. inflexa* from Petersburg, Virginia, and Bush's plants of it from southern Missouri are the bases for the inclusion of *S. Elliottii* in Gray's Manual, ed. 7; the Missouri and Tennessee material of *S. inflexa* was cited in the Synoptical Flora as *S. Elliottii. S. neo-mexicana* was placed in *S. Elliottii* in Gray's Plantae Wrightianae and in Torrey's Botany of the Mexican Boundary; *S. Lindheimeri* was first treated as *S. Elliottii, β texana* Torr. & Gray; and *S. rubro-marginata* of Florida was dismissed by Robinson in the Synoptical Flora, with the comment: *"S. rubro-marginata . . .* appears to be merely a broad-leaved form of *S. Elliottii."* Abundant material now at hand indicates its specific distinction from the latter. See p. 382.

PLATE 638, FIG. 1, shows the TYPE of *Sida inflexa,* × 2/5; FIG. 2, portion of stem, × 10, covered with puberulence; FIG. 3, lower surface of leaf, × 10; FIG. 4, calyx, × 4, from the side; FIG. 5, ring of carpels, × 4, from above; all from TYPE or topotype. In PLATE 639, FIGS. 1–3 are details of *S. inflexa:* FIG. 1, a pressed flower, × 2 (margins reinforced by pencil), from Nottoway River, Double Bridge, Virginia, *Fernald & Long,* no. 11,076; FIGS. 2 and 3, carpels, × 10, from the TYPE. In PLATE 639 the remaining figures are details of related species: FIG. 4, carpel, × 10, of *S. Elliottii* Torr. & Gray from Miami, Florida, *A. H. Curtiss,* no. 5853; FIG. 5, calyx and ring of carpels, × 4, from ISOTYPE of *S. rubro-marginata* Nash, Tampa, Florida, *Nash,* no. 2472; FIG. 6, ripe carpel, × 10, of *S. rubro-marginata* from Punta Rossa, Florida, 1878, *Garber;* FIG. 7, ripe carpel, × 10, of *S. neo-mexicana* Gray, from the TYPE, eastern New Mexico, *Wright;* FIG. 8, ripe carpel, × 10, of *S. Lindheimeri* Engelm. & Gray, from the TYPE, Texas, 1843, *Lindheimer,* no. 24.

Hibiscus militaris Cav. Local range extended to New Kent County: bottomland woods by Chickahominy River, north of Long Bridge, southeast of Quinton, no. 11,371.

Stewartia Malachodendron L. To the few known Virginian stations add one in Norfolk County: dry woods of a "hammock", Great Dismal Swamp, west of Yadkin, nos. 11,078 and 12,131, many tree-like shrubs up to 6 m. high.

*Hypericum mutilum L., var. latisepalum Fernald. King William County: fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, no. 11,590.

Heretofore known only from Florida to Texas. See p. 402.

H. Drummondii (Grev. & Hook.) T. & G. Greensville County: border of cultivated argillaceous field, northwest of Taylor's Millpond, no. 11,080; open argillaceous border of woodroad northeast of Gaskins, no. 11,081.

The plump capsules burst under slight pressure, pushing out their masses of ripe and unripe seeds. The colored children, knowing the plant as "Nits and Lice", demonstrated this feature to us. They repudiated the very common and slender-fruited *H. gentianoides* as a member of the same group because it had "no lice", the capsules being soft and unresponsive. The fact that they so sharply differentiated *H. Drummondii* indicates that it is less uncommon than we had supposed.

*Elatine americana (Pursh) Arn. King William County: fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, no. 11,588. James City County: tidal mud along Powhatan Creek, north of Jamestown Island, no. 11,083. See pp. 386 and 401 and map 18.

Extension south from the estuary of the Delaware.

*Viola triloba Schwein., var. dilatata (Ell.) Brainerd. Southampton County: rich sandy loam of woods by Blackwater River, northeast of Ivor, no. 10,735; rich mixed and deciduous woods near Nottoway River, above Carey Bridge, no. 10,336.

First northeast of western North Carolina. See p. 363.

V. esculenta Ell. To the two stations recorded add one in Nansemond County: abundant and very large, along a ditch bordering wet woods and clearings near lumber camp of Camp Lumber Co., Great Dismal Swamp, southeast of Whitemarsh School, no. 11,591. See p. 400.

V. emarginata (Nutt.) LeConte, var. acutiloba Brainerd. To the few recorded stations add one in Southampton County: border of dry mixed woods by Applewhite's Church, no. 10,337.

V. STRIATA Ait. PRINCE GEORGE COUNTY: rich wooded slope by James River, Indian Point, nos. 11,087 and 11,874.

Our first station on the Coastal Plain of a characteristically inland species. See p. 382.

AMMANNIA KOEHNEI Britton. To the single recorded Virginian station (on York River) add the following in PRINCESS ANNE COUNTY: brackish to fresh marsh along Back Bay, at eastern margin of Long Island, nos. 10,741 and 11,088; similar habitat, Cedar Island, no. 12,416. See p. 370 and MAP 4.

GAURA BIENNIS L. PRINCE GEORGE COUNTY: sandy shore of James River, City Point, no. 11,094.

Our first Coastal Plain station.

ERYNGIUM AQUATICUM L. Very characteristic of fresh tidal shores and marshes at least from the James River to the Mattaponi (many nos.). See p. 386.

SANICULA CANADENSIS L., var. **grandis,** var. nov., a var. genuina recedit foliis amplioribus et fructibus crassioribus; folii petiolati imi foliolis longioribus 5.5–13 cm. longis, folii subsessilis, imi foliolis longioribus 4.5–12 cm. longis; fructuum triadibus 1–1.5 cm. latis.—Rich woodlands, western Vermont to Nebraska, south to North Carolina, Tennessee, Missouri, Oklahoma and Texas. TYPE from Bristol, Vermont, July 25, 1898, *Ezra Brainerd* (in Herb. Gray.).

Sanicula canadensis consists of three strongly marked varieties, as follows.

S. CANADENSIS L., var. **genuina.** *S. canadensis* L. Sp. Pl. 235 (1753) in part, as interpreted by Gray, Bicknell and later authors. Larger leaflets of the well developed petioled leaves 3.5–8 cm. long, 1.5–4(–5) cm. broad; larger leaflets of lower subsessile leaves (at lower fork of stem) 3–7 cm. long; triads of fruits (including tips of bristles) 7–9 mm. broad.—Open woods, Florida to Texas, north to Rockingham County, New Hampshire, Plymouth, Bristol and Dukes Cos., Massachusetts, central and southern Connecticut, Long Island, New Jersey, Pennsylvania, West Virginia, Ohio, Kentucky, Missouri and Oklahoma.

This is the common plant of eastern Virginia.

*Var. GRANDIS Fernald (supra). Var. *typica* H. Wolff in Engler, Pflanzenr. iv^{228}. 67 (1913), not *S. canadensis* L., as shown by the plants known to and cited by Linnaeus. Larger leaflets of well developed petioled leaves 5.5–13 cm. long, 2.5–6(–8) cm. broad; larger leaflets of lower subsessile leaves (at lower fork of stem) 4.5–12 cm. long; triads of fruits 1–1.5 cm. broad.—Of broad inland range (see above).

Our only Coastal Plain stations in Virginia are along the James. Prince George County: wooded bank of James River, City Point, no. 10,343 (plants up to 1.7 m. high). Surry County: rich calcareous wooded slopes along James River, Claremont Wharf, no. 10,344.

Var. floridana (Bickn.) H. Wolff, l. c. 67 (1913). *S. floridana* Bickn. in Bull. Torr. Bot. Cl. xxiv. 581 (1897). Smaller throughout; the abruptly cuneate small leaflets with firm spinulose teeth; larger leaflets of petioled leaves 2–5 (rarely –8) cm. long; triads of fruit 5–7 mm. broad.—Dry sandy woods, Florida to Mississippi, north to southeastern Virginia.

It would be perfectly possible to make a rational argument that the species known as *Sanicula canadensis* L., a southern species unknown in Canada, should be called *S. marilandica* L.; and that we should further reverse the established usage and take up for the more boreal and transcontinental *S. marilandica* of all recent authors the name *S. canadensis*. Such a complete reversal has more than the geographic argument in its favor. On the other hand, it is so evident that Linnaeus was utterly at sea regarding the real characters of the two and so confused the two elements in his writings and memoranda that it cannot be said that his own herbarium and the specimens he saw give unequivocal support to such a reversal. The situation, under the two names, is as follows.

S. canadensis L. The pre-Linnean references are to a Clayton plant of eastern Virginia described by Gronovius and supposed by him to be *Sanicula canadensis, amplissimo laciniato folio* of Tournefort. Tournefort gave no further information; consequently the only pre-Linnean reference of value is that of Gronovius. This account says "Pedunculi infra bifurcaturam caulis longi", thus emphasizing the usual 2 long rays or branches so characteristic of the plant with divaricate and bifurcate inflorescence, the *S. canadensis* of Bicknell, Britton and Robinson & Fernald. But in his own herbarium Linnaeus had a Clayton specimen from Virginia (part of Clayton's much confused no. 28—see below) which Linnaeus definitely marked *S. canadensis*. This is the northern large species, the *S. marilandica* sensu Bicknell et al., and it was presumably what Linnaeus had in mind when he gave the simple comparative phrase of original diag-

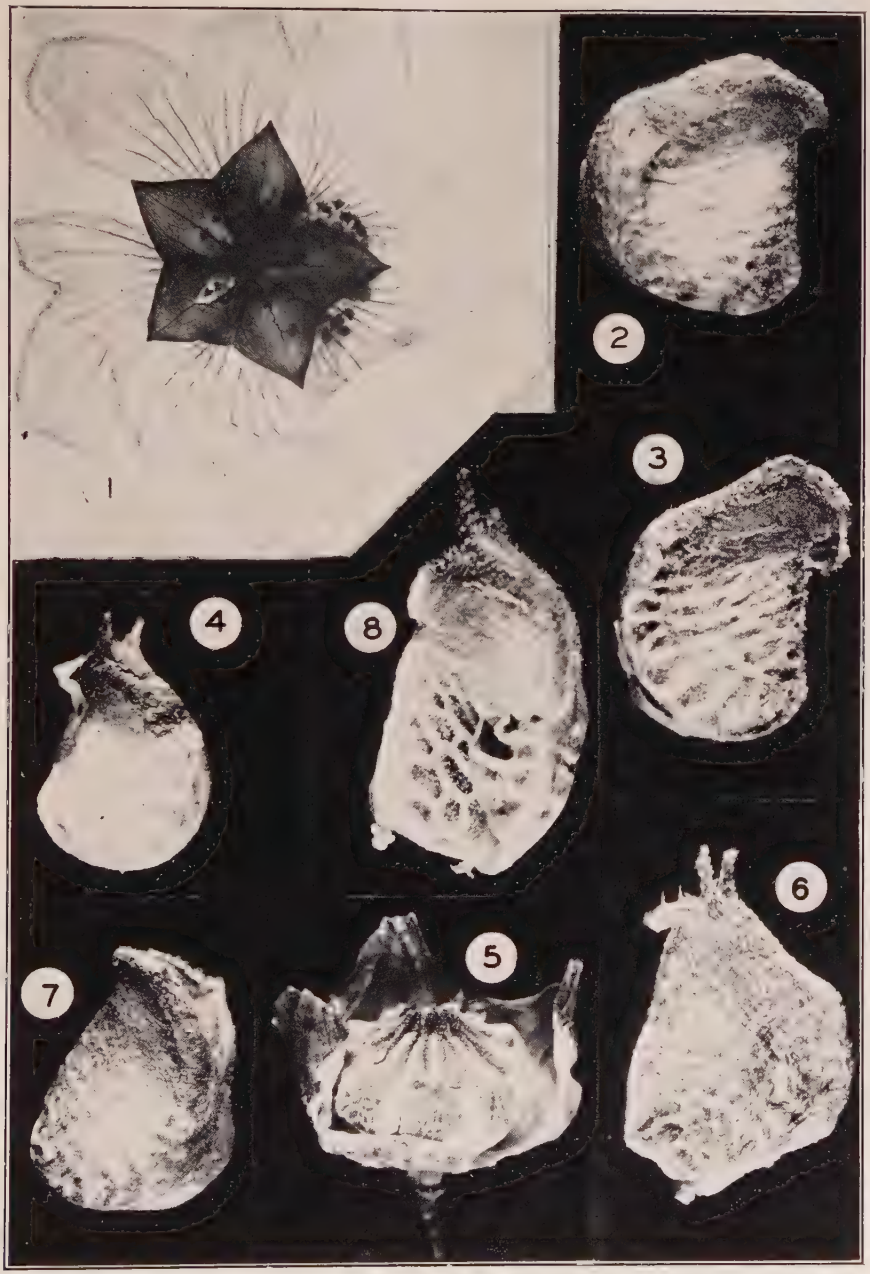

Photo. W. H. Hodge.

SIDA INFLEXA: pressed flower, × 2, from Double Bridge, Virginia; FIGS. 2 and 3, ripe carpels, × 10, from TYPE.

S. ELLIOTTII: FIG. 4, ripe carpel, × 10, from Florida.

S. RUBRO-MARGINATA: FIG. 5, calyx and ring of carpels, × 4, from ISOTYPE; FIG. 6, ripe carpel, × 10, from Florida.

S. NEO-MEXICANA: FIG. 7, ripe carpel, × 10, from TYPE.

S. LINDHEIMERI: FIG. 8, ripe carpel, × 10, from TYPE.

noses: "Structura *ita praecedentis* [*S. europaea*] . . . *sed planta decuplo saepe omnibus partibus major.*" Asa Gray, in his manuscript notes on the Linnean Herbarium, specifically stated that the Linnean specimen of *S. canadensis* has long-exserted styles; and this observation was verified by Mr. Long and me in 1930. At that time, however, another Gronovian (Clayton) plant in the Clayton (Gronovian) herbarium was found to be short-styled *S. canadensis* sensu Bicknell et al. On the portion of the long-styled Clayton material of no. 28 (*S. marilandica* of recent authors) retained in the Gronovian herbarium occurs the original label:

Sanicle. D. Clayton An. 1734. Num. 28. Claython ex Virginia an 1734. Num. 28. Lappula fere umbellata Astrantiae foliis virginiana. Plukn. Mant. 114.

This was subsequently marked in a second (perhaps clerical) hand: "Sanicula flosculis masculinis pedunculatis, hermaphroditis sessilibus flor. Virg. p. 31", this phrase being the diagnosis given by Gronovius, Fl. Virg. 31, for no. 28, which Linnaeus cited as his basis of *S. marilandica*. This Clayton material with long styles was marked by Asa Gray: "The type of *Marilandica*. A. G." "The greater part of this was given to Linnaeus & he has wrongly named it : *Canadensis*. A. G."

However, there is another sheet of Clayton's no. 28 in the Gronovian herbarium. Mr. Long and I studied it in 1930 and Professor Alfred Rehder then kindly photographed it. This specimen is appropriately discussed under

S. MARILANDICA L. Linnaeus referred to 3 sources and gave no new diagnoses: (1) to Gronovius, p. 31 (*i. e.* Clayton's no. 28, in part at least); (2) to Hortus Upsaliensis; (3) to Ray. Hortus Upsaliensis referred back to the same accounts by Gronovius and by Ray, with 2 other references which were not cited by Linnaeus in Species Plantarum. Gronovius gave the brief diagnosis, "Sanicula *flosculis masculinis pedunculatis; hermaphroditis sessilibus*" and the citation, "*Sanicula sylvatica floribus albis, foliis triscuspidatis. Clayt. n.* 28"; also the reference to Ray which was later cited by Linnaeus.

Ray's account was detailed. It emphasized the *small* (minimis) fruit, the *divaricate* and *dichotomous* branching, the short (pollicares), simple peduncle in the forks, and the pair of leaves

at the forks; all very striking characters of *S. canadensis* sensu Bicknell et al., not of *S. marilandica* of Bicknell et al. One sheet of Clayton's no. 28 has already been discussed. The other bears in the hand of Solander, apparently, the full text from Gronovius, p. 31, which referred to no. 28. This second sheet is perfectly characteristic of the bifurcate, divaricate-branched, small-leaved and small-fruited, short-styled plant (*S. canadensis* sensu Bicknell) which abounds in eastern Virginia. It is, thus, quite unlike the other sheet of no. 28, which bears the original annotation by Gronovius.

Since the names *Sanicula canadensis* and *S. marilandica,* as used by Linnaeus, were hopelessly confused, as were the two species as treated by all authors up to Bicknell (1895), we should not lay too much stress upon attempts to retrace the vague mental processes underlying the confusion. Gray decided that the long-styled specimen of no. 28 should stand as *S. marilandica,* the short-styled specimen as *S. canadensis.* Bicknell, the first monographer to clarify the formerly tangled group, followed Gray; and Wolff has followed their interpretations. These decisions should stand. Nothing would be gained by retypifying the species on the basis of early misconceptions.

*Torilis japonicus (Houtt.) DC. Prince George County: waste ground near wharf, City Point, no. 10,354.

Cited by Coulter & Rose from Baltimore and Washington.

*Lilaeopsis carolinensis Coult. & Rose. Princess Anne County: forming an extensive mat in shallow pool in brackish to fresh marsh along Back Bay, at eastern margin of Long Island, no. 10,758.

The fourth known station in North America and the first north of southeastern North Carolina; species bicentric, its second area on the drainage-system of La Plata River in eastern South America. See p. 371 and map 6.

L. chinensis (L.) Ktze. To the few recorded stations add the following. Charles City County: sandy tidal shore of James River, at "Four Oaks", below Harrison Point, no. 11,388. New Kent County: sandy tidal shore of York River, near mouth of Fillbate's Creek, north of Holly Forks, no. 11,597. See p. 391.

*Rhododendron canescens (Michx.) G. Don. King William County: steep wooded bank of Mattaponi River, at Horse

Landing, near King William Courthouse, no. 11,602 (shrubs up to 3 m. high). Sussex County: wooded bottomland, Jones Hole Swamp, west of Coddyshore, no. 10,363 (shrubs 3 m. high); rich woods and bushy clearing just east of the "fall-line", along Nottoway River, Double Bridge, about 6 miles northwest of Jarratt, no. 11,099. Southampton County: steep wooded slopes by Three Creek, northwest of Applewhite's Church, no. 10,364 (straggling, 0.5 m. high), 10,365 and 11,882 (erect, 1.5 m. high); on steep slope at Round Gut, southwest of Franklin, no. 11,391; rich woods near Raccoon Creek, north of Mill Neck Church, no. 12,427. Nansemond County: damp thicket, steep bank of branch entering Blackwater River, northwest of Duck's Store, no. 12,428. See pp. 361 and 363.

Rehder in Wilson & Rehder, Mon. Azaleas, 144 (1921) gave the range: "from southwestern Tennessee and southern central North Carolina to eastern South Carolina and northeastern Florida to extreme southeastern Texas", etc.

*Kalmia latifolia L., var. laevipes Fernald in Rhodora, 53 (1940).

With or apart from typical *K. latifolia* in the southeastern counties.

*Zenobia pulverulenta (Bartram) Pollard. Nansemond County: *Chamaecyparis* swamp in sandy and peaty pine barrens northeast of Sandy Landing, south of South Quay, nos. 12,149 and 12,150. Passing through transitional shrubs (such as no. 12,151) into the green-leaved and commoner

*Z. pulverulenta, forma **nitida** (Michx.), comb. nov. *Andromeda speciosa*, var. *a. nitida* Michx. Fl. Bor.-Am. i. 256 (1803); Rehder in Bailey Cycl. Am. Hort. iv. 2007 (1902).—Leaves of fertile branches oval or elliptic-oblong, obtuse, shallowly crenate, green both sides.—In Virginia known from two southern counties. Nansemond County: swampy depressions and *Chamaecyparis* swamps in pine barrens, from northeast of Cox Landing to east of Sandy Landing, south of South Quay, nos. 11,102–11,104, distributed as var. *nuda*, no. 12,152. Southampton County: swampy woods southeast of Round Gut, southeast of Franklin, no. 11,395 (shrubs up to 3 m. high). Passing into

*Z. pulverulenta, forma **nuda** (Ventenat), comb. nov. *Andromeda cassinefolia* Ventenat, Descr. Jard. Cels, 60, t. 60 (1800). *A. cassinefolia*, var. *nuda* Ventenat, Jard. Malmais. ii. 79 (1804). *Z. cassinefolia* (Vent.) Pollard in Bull. Torr. Bot. Cl. xxii. 231 (1895). *Andromeda pulverulenta*, var. *nuda* (Vent.) Schneider, Ill. Handb. Laubholzk. ii. 526 (1911). *Z. pulverulenta*, var. *nuda* (Vent.) Rehder in Mitteil. Deutsch. Dendrol. Gesells.

for 1915: 226 (1915).—Leaves lance-oblong to narrowly ovate, acute at both ends, prominently toothed, green both sides.—In Virginia known only from Nansemond County: with the other forms, *Chamaecyparis* swamp in sandy and peaty pine barrens northeast of Sandy Landing, south of South Quay, no. 12,154.

In western Nansemond County the three forms of *Zenobia* are clearly confluent. Furthermore, among the very few sheets in the Gray Herbarium there are two sent from South Carolina by M. A. Curtis, one the green-leaved with elliptic-oval round-tipped blades, as *Andromeda speciosa* Michx., *a. nitida*, the other of the similar shrub with strongly whitened blunt leaves, as *A. speciosa, β. pulverulenta* and marked, "Mixed helter-skelter with the other". Curtis's experience in South Carolina was obviously like ours in Virginia. As forms they are strikingly different, but they certainly are not geographic varieties, much less two species—the disposition of them by Small. See pp. 385 and 397 and map 16.

The application of the names needs clarification.

The first name in the species was apparently *Andromeda pulverulenta* Bartram, Travels, pl. 8, opp. p. 476 (1791), accompanying a crude but recognizable drawing of a flowering branch (crude as to outline and toothing of leaf), with an evident attempt to indicate pulverulence on foliage and branches. There was no word of diagnosis and the name cannot be taken up as adequately published by Bartram. Willdenow, however, Sp. Pl. ii[1]. 610 (1799) properly described the species under Bartram's name, citing the plate, so that the species *Andromeda pulverulenta* properly dates from Willdenow's adequate publication (Bartram ex Willd.); but, whereas Bartram's original plate accompanied the description of "The North West of Cape Fear, here at Ashwood [the old estate of Colonel William Bartram] . . . near three hundred yards over . . . and . . . eighty or ninety miles above the capes", therefore near the inner border of the Coastal Plain of southeastern North Carolina, Willdenow rendered its geographic source as "*Habitat* in Florida."

In 1800, Ventenat, Descr. Jard. Cels, 60, t. 60, described and illustrated *Andromeda cassinefolia*, "Feuilles . . . ovales, dentées et munie d'une glande au sommet de chaque dent, souvent aiguës, quelquefois obtuses, glabres, . . . d'un verd foncé", etc.

The plate shows narrow leaves mostly acute at each end and coarsely toothed, a relatively infrequent extreme, like our no. 12,154. But Ventenat, like Willdenow in case of Bartram's shrub, took the easiest course and said "Arbrisseau découvert par Michaux dans la Florida", although Michaux himself (Fl. Bor.-Am.) cited his own collections as discovered "in Carolina septentrionali, circa *Fayette-Ville* et *Wilmington.*"

Andromeda speciosa Michx. Fl. Bor.-Am. i. 256, clearly described "A. foliis ovalibus, subrotundis, obtusis, crenatis serratisve", is the least rare form of the species, with green, obtuse or round-tipped relatively broad and low-crenate leaves (except on vigorous leaders). Michaux divided his *A. speciosa* into two varieties: var. *a. nitida* (the typical variety) from "circa *Fayette-Ville* et *Wilmington*" and var. "*β. pulverulenta:* Bart. ramis, foliis floribusque pulvere albo inspersis; qui candor certo morbus est . . . in Carolinae utriusque stagnosis." The name *pulverulenta* has been sufficiently considered, except that Ventenat, Jard. Malmais. ii. 79 (1804) treated it as *A. cassinefolia* Vent. (1800), var. *pulverulenta.*

Michaux's *A. speciosa*, *a. nitida* is the shrub with round-tipped or obtuse green leaves. Although the name var. *nitida* was without diagnosis, Michaux obviously meant it for his typical *Andromeda speciosa.* It was taken in this sense by Rehder in 1902 and I am so considering it.

Small and others, following Willdenow and Ventenat, who respectively ascribed Bartram's locality on Cape Fear River, North Carolina, and Michaux's stations, "in Carolina septentrionali, circa *Fayette-Ville* et *Wilmington*", to "Florida", state the range of *Zenobia cassinefolia* as "Pinelands, Coastal Plain, NE Fla. to N. C." and of typical *Z. pulverulenta* as "Ga. (or Fla.?) to N. C." In the herbarium of the New York Botanical Garden, where one would expect specimens from Florida (Small for many years collecting there), and in the Gray Herbarium the only material (until our Virginia collections) is from North and South Carolina, and at the former institution there is a letter to Dr. Small, stating that in the National Herbarium there is no material from south of South Carolina. "Florida" may safely be dropped from the range. See map 16.

*Vaccinium crassifolium Andr. (*Herpothamnus* Small). Nansemond County: forming extensive carpets in the sandy or peaty pine lands and pine barrens south of South Quay: southwest of Marsh Hill School (less common than at other stations), no. 11,105; east of Cox Landing, nos. 10,774 and 12,160; southeast of Cox Landing, no. 11,604 (fruit, ripe October 15, purple-black, lustrous, soft, juicy, sweet and bland); southeast of Sandy Landing, no. 11,106; 1–1½ miles south of Cherry Grove, no. 11,398. Isle of Wight County: dry sandy pine barrens south of Lee's Mill, no. 11,889.

Extension north from southeastern North Carolina. See p. 379 and map 12.

Pyxidanthera barbulata Michx. To the single station recorded add another, also in Isle of Wight County: dry sandy pine barrens south of Lee's Mill, no. 11,893. Nansemond County: very abundant, with *Vaccinium crassifolium*, in pine barrens south of South Quay, nos. 10,775, 10,776, and 11,716; rare in pineland southwest of Marsh Hill School, no. 11,107. See p. 379.

*Lysimachia producta (Gray) Fernald. Southampton County: bushy swales and borders of swampy woods near Blackwater River, Cobb's Wharf, no. 10,382.

Our first material from south of the District of Columbia, except from western North Carolina. See p. 364.

L. (§ Steironema) radicans Hook. New Kent County: bottomland woods by Chickahominy River north of Long Bridge, southeast of Quinton, no. 11,402. Southampton County: about spring-heads bordering alluvial wooded bottomland of Nottoway River, Cypress Bridge, nos. 10,778, 10,779, 11,109 and 11,401.

In Rhodora, xxxix. 438 (1937), I recorded the Cypress Bridge station and expressed some doubt as to the exact identity. We watched the plant from anthesis through prolonged drowning to maturity, when it set no fruit; there is now no doubt of its identity with the plant of the Mississippi and Gulf drainage. See pp. 366 and 397 and map 3.

*Sabatia angularis (L.) Pursh, forma **cleistantha,** f. nov., corollis minutis tubulosis clausis pallidis.—Greensville County, Virginia: argillaceous and sphagnous meadow northwest of Taylor's Millpond, August 29, 1939, *Fernald & Long,* no. 11,112 (type in Herb. Gray).

S. amoena (Raf.) G. Don. To the few recorded stations add another in Princess Anne County: brackish to fresh marsh

along Back Bay, at eastern margin of Long Island, no. 11,113. See p. 389.

*Nymphoides aquaticum (Walt.) Ktze. Princess Anne County: shallow water near margin of Salt Pond, no. 10,788, station shown us by the Misses Sally Ryan and Mary Leigh.

Fraxinus americana L., var. microcarpa Gray. Sussex County: wooded bottomland, Nottoway River, southwest of Homeville, no. 10,389. See p. 361.

Although Small speaks of the small-fruited extreme as having no seeds, our material seems normal. Its fruits are not so small as in the original material from Alabama nor as in Small's collection from Smyth County, Virginia, but decidedly smaller than in the regular run of *F. americana*.

F. pennsylvanica Marsh., var. Austini Fernald in Rhodora, xl. 452, pl. 529, figs. 1 and 2 (1939). Charles City County: wooded sandy margin of James River, Wilcox Wharf, no. 11,110.

Our first station on the Coastal Plain of Virginia.

F. pennsylvanica, var. lanceolata (Borkh.) Sarg. Greensville County: alluvial woods along Meherrin River, Emporia, no. 11,111.

Our first station on the Coastal Plain of Virginia.

*Apocynum sibiricum Jacq. *A. hypericifolium* Ait. See Fernald in Rhodora, xxxvii. 327, 328 (1935). Charles City County: sandy beach of James River, southeast of Tettington, no. 11,405. See p. 396.

Woodson in his monograph of the genus, Ann. Mo. Bot. Gard. xvii. 137 (1930), cited nothing from south of Delaware and the District of Columbia.

*Amsonia Tabernaemontana Walt. Southampton County: rich mixed and deciduous woods near Nottoway River, above Carey Bridge, nos. 10,790 and 11,895. Greensville County: wooded bottomland of Fontaine Creek southeast of Taylor's Millpond, no. 10,394. See p. 359.

Woodson, in his monograph of *Amsonia*, Ann. Mo. Bot. Gard. xv. 405–407 (1928), cited *A. Tabernaemontana* as only escaped from cultivation northeast of South Carolina. Along the Nottoway and Fontaine Creek it is a part of the strictly indigenous flora. The only Virginian material seen by Woodson was from Petersburg "data lacking" and referred by him to var. *salicifolia* (Pursh) Woodson. The variety abounds in rich woods

and clearings along Appomattox River, slightly above the "fall-line" about 2 miles west of Petersburg, no. 11,896.

Acerates floridana (Lam.) Hitchc. To the single known station in Sussex County (now under the plow) add one (now also under the plow!) in Greensville County: very scarce (now deeply buried by clay thrown over it in ditching), peaty swale by Southern Railway northeast of Emporia, no. 11,119.

*Asclepias lanceolata Walt. Princess Anne County: brackish to fresh marsh along Back Bay, Pellitory Point, northeast of Munden, no. 11,117.

As pointed out by me in Rhodora, xxxvii. 438 (1935), the plant of Princess Anne and Norfolk Counties is mostly var. *paupercula* (Michx.) Fernald, with linear leaves. The Pellitory Point station (rather extensive) is the first known to us between northeastern North Carolina and Delaware. See p. 387.

A. purpurascens L. To the single station in Nansemond County add one in Dinwiddie County: rich deciduous woods about old marl-pits east of Burgess Station, no. 10,398.

Breweria humistrata (Walt.) Gray. Local range extended northward and eastward. New Kent County: dry clearing south of Providence Forge, no. 11,407. Surry County: dry thicket north of Surry Courthouse, no. 10,794. Nansemond County: dry sandy woods at Cox Landing, south of South Quay, no. 11,408.

Ipomoea hederacea Jacq., var. integriuscula Gray. To the station in Princess Anne County recorded in 1935 add one in Southampton County: roadside fencerow west of Franklin, no. 11,409.

Phlox Hentzii Nutt. in Journ. Acad. Nat. Sci. Phila. vii. 110 (1834). *P. nivalis* sensu Wherry in Bartonia, no. 11: 8 (1929); probably not of Loddiges, Bot. Cab. viii. no. 780 (1823), without description. Local range extended eastward into Nansemond County: white sand of pine and oak woods and clearings near Cathole Landing, west of Factory Hill, nos. 11,414 and 11,897. See p. 399.

In my earlier papers, without looking carefully into the matter, I erroneously took up the name *Phlox nivalis* Loddiges, in deference to the usage of Dr. Wherry, l. c., and in later papers. When the original source is consulted, however, no adequate description is found. Loddiges showed a branch with a mass of white corollas, the tubes barely exserted from the calyx, and his text was as follows:

No. 780

PHLOX NIVALIS.

Class. Order.

PENTANDRIA *MONOGYNIA.*

. . . . . .

This is a native of Carolina and Georgia. It was sent to us by our excellent friend Dr. Wray, of Augusta, and flowered beautifully the last spring. We think it so different from both subulata and setacea, that it may well form another species.

It is probably not quite hardy: we preserved it very well in a cold frame, and have increased it by cuttings. The soil should be light loam, with a little peat mixed. Like the setacea, it appears to be partly shrubby.

That, of course, is not a diagnosis and, unfortunately, the Loddiges plate (which shows no analyses of the flowers, which would admit it under the International Rules) shows corolla-tubes barely exserted from the calyx, one of the few flowers (at the left) which show the corolla-tube with it exceeding the calyx by only 2 mm. The many sheets in the Gray Herbarium checked by Dr. Wherry as *"Phlox nivalis"* have the long-exserted corolla-tube exceeding the calyx by 7–10 mm. Nuttall's account of *P. Hentzii* had the required diagnosis and a clear discussion of the plant. Its exact geographic source was not given, merely "Sent to the herbarium of the Academy by my friend Mr. Hentz", the plant said to be a "common species in the southern pine barrens." One of Nuttall's original specimens (part of the TYPE) in the Gray Herbarium bears in Nuttall's hand the clarifying data: "Chapel Hill, N. Carolina. *N. M. Hentz*". Material of the magenta-colored form (the only one known in southeastern Virginia) was collected near Chapel Hill on April 4, 1939, by *A. S. Pease* (no. 27,007).

HYDROLEA QUADRIVALVIS Walt. Local range extended eastward to PRINCESS ANNE COUNTY: margin of Stubby Lake, no. 10,797.

HELIOTROPIUM CURASSAVICUM L. To the two stations already recorded add from PRINCESS ANNE COUNTY: open mud and sand along Back Bay, Pellitory Point, northeast of Munden, no. 11,124; similar habitat east of Creeds, no. 11,125. See pp. 369 and 387.

ONOSMODIUM VIRGINIANUM (L.) A. DC. To the few recorded stations add one in SOUTHAMPTON COUNTY: dry sandy pine woods near Nottoway River, above Carey Bridge, no. 10,404. SUSSEX

County: dry open sandy woods and thickets between Littleton and Peters Bridge, no. 12,179; sandy woods near Chub, no. 12,448. See p. 362.

Verbena officinalis L. Dinwiddie County: roadsides and waste places, Petersburg, no. 10,798. Henrico County: waste places and railroad ballast, Richmond, no. 12,451. Princess Anne County: sandy clearing, Ragged Island, no. 12,452.

Our first stations on the Coastal Plain of Virginia; apparently very local.

V. scabra Vahl. To the two stations already recorded add two in Princess Anne County: inner border of brackish to fresh marsh along Back Bay, at eastern margin of Long Island, no. 10,799; sandy clearing, Ragged Island, no. 12,453. See p. 371.

Lippia nodiflora (L.) Michx. To the station (Knott's Island) recorded in 1935 add others, also in Princess Anne County: brackish to fresh marsh along Back Bay, at eastern margin of Long Island, no. 11,126; marsh along Back Bay, eastern margin of Ragged Island, no. 12,454. See pp. 370 and 389.

Trichostema setaceum Houtt. (*T. lineare* Walt.). To the stations in Isle of Wight County recorded in 1937 add from Southampton County: white sand of pine and oak woods north of Point Beach, south of Franklin, no. 11,416; similar habitat, southeast of Wiggins School, no. 11,417. See p. 397.

Pycnanthemum verticillatum (Michx.) Pers. Dinwiddie County: springy sphagnous swale about 5 miles east of Burgess Station, no. 11,131.

Heretofore known in the state only from the western counties. Associated in the swale with other localized species. See p. 390.

Cunila origanoides (L.) Britton. Entering the Coastal Plain in Sussex County: rich woods and bushy clearing just east of the "fall-line" along Nottoway River, Double Bridge, about 6 miles northwest of Jarratt, nos. 11,132 and 11,420. Southampton County: steep wooded slopes by Three Creek, northwest of Applewhite's Church, no. 10,409. See p. 363.

*Hyptis mutabilis (A. Richard) Briq., var. spicata (Poit.) Briq. Dinwiddie County: roadsides and waste places, Petersburg, no. 11,418.

A tropical American species (variety chiefly West Indian) not previously reported from north of Florida. See p. 400.

*Physalis angulata L. Princess Anne County: borders of low woods and clearings along Back Bay, Long Island, nos. 10,811 and 11,137.

Although given a broad range, "Pa. to Minn. and southw." by Robinson & Fernald in Gray, Man. ed. 7, there is no other indigenous material in the Gray Herbarium from north of North Carolina and southern Illinois. In his monograph of the group, Mem. Torr. Bot. Cl. iv. 334 (1896), Rydberg was unable to cite specimens from north of North Carolina. See p. 371.

P. PUBESCENS L. Range extended westward into NANSEMOND COUNTY: wood-road in swampy woods east of Milk Landing, south of South Quay, no. 10,810.

*LYCIUM CHINENSE Mill. DINWIDDIE COUNTY: roadsides and waste places, abundant and rapidly spreading, Petersburg, no. 11,609.

*CYMBALARIA MURALIS Gaertn., Mey. & Scherb. DINWIDDIE COUNTY: abundant on bank by railroad, Petersburg, no. 11,610.

Pennell (Scroph. E. Temp. N. Am. 317) cites no material seen from Virginia.

KICKSIA ELATINE (L.) Dumort. NEW KENT COUNTY: ditch at border of damp woods, near Fillbate's Creek, north of Holly Forks, no. 11,611. HENRICO COUNTY: waste places and railroad ballast, Richmond, no. 12,470. SOUTHAMPTON COUNTY: cinders of freight-siding, Branchville, no. 10,414.

CHELONE GLABRA L., var. ELATIOR Raf. SOUTHAMPTON COUNTY: with *C. Cuthbertii* Small, border of low woods southwest of Cypress Bridge, no. 11,488.

A plant chiefly of the upland, here definitely on the Coastal Plain.

C. OBLIQUA L. SOUTHAMPTON COUNTY: seeping wooded slope bordering bottomland of Three Creek, northwest of Carey Bridge, nos. 11,419 and 11,424.

The only Virginian station (probably the original of Clayton) known to Pennell, l. c., is in Gloucester County. See pp. 363 and 399.

C. CUTHBERTII Small. Local range extended eastward into NANSEMOND COUNTY: wet bushy swale east of Cherry Grove, south of South Quay, nos. 11,138 and 11,614; wet peaty thicket in pine barrens, east of Cox Landing, south of South Quay, no. 11,423. See p. 384.

*BACOPA CYCLOPHYLLA Fernald in RHODORA, xli. 446 (1939) (*Herpestis rotundifolia* Gaertn. fil.). KING WILLIAM COUNTY: very scarce, fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, no. 11,613.

The eighth known station, connecting that at Wilmington,

North Carolina, with the two in eastern Maryland. See p. 402. and map 22.

*Gerardia racemulosa Pennell. Nansemond County: sandy and peaty pine barrens, east of Cox Landing, south of South Quay, nos. 11,145 and 11,433.

Pennell, Scroph. E. Temp. N. A., map 115 (p. 434), indicates no station between the Eastern Shore of Maryland and southeastern North Carolina. *G. racemulosa* seems like a pine-barren extreme of *G. purpurea* L.

*Utricularia biflora Lam. King William County: fresh tidal shore of Mattaponi River, at Horse Landing, near King William Courthouse, no. 11,620. Charles City County: tidal water of Kimage's Creek, Kimage's, no. 11,438. Princess Anne County: shallow pools in brackish to fresh marsh along Back Bay, east of Munden, no. 11,147; similar habitat, east of Creeds, no. 11,148. Sussex County: small sandy pond in woods north of Double Bridge, about 6 miles northwest of Jarratt, no. 11,439.

There is no previous material in the herbarium of the New York Botanical Garden and in the Gray Herbarium from between South Carolina and southern New England. See p. 387.

U. fibrosa Walt. Nansemond County: seepy sandy and peaty open spots in sphagnous savannah-like swale east of Cherry Grove, south of South Quay, nos. 11,618 and 12,186. See p. 403.

There is no previous material in the herbaria of the New York Botanical Garden and of the Philadelphia Academy nor in the Gray Herbarium from between southeastern North Carolina and southern Delaware and New Jersey. Mr. Lloyd G. Carr has reported it (Claytonia, iv. 23) from Augusta County.

U. juncea Vahl. Local range extended to Nansemond County: seepy sandy and peaty open spots in sphagnous savannah-like swale east of Cherry Grove, south of South Quay, no. 11,149. See p. 384.

U. virgatula Barnhart. Local range extended to Nansemond County: with the last, no. 11,150. See p. 384.

*Ruellia strepens L., forma cleistantha (Gray) S. McCoy. Prince George County: wooded swamp by James River south of Indian Point, no. 11,152.

*Diodia teres Walt., var. hirsutior Fern. & Grisc. Princess Anne County: sandy fields, Long Island, no. 11,153. Nansemond County: dry white sand of pine barrens, east of Cox Landing, south of South Quay, no. 11,156. Southampton

Photo. H. G. Fernald.

BOLTONIA ASTEROIDES: FIGS. 1 and 2, portions of TYPE, × 1; FIG. 3, two heads, × 2, from Susquehanna River; FIG. 4, old head, × 2, to show split receptacle and mature fruit; FIG. 5, ripe achene, × 10.

Photo. H. G. Fernald.

BOLTONIA ASTEROIDES, var. GLASTIFOLIA: FIG. 1, plant, × 2/5, from Chickahominy River; FIGS. 2 and 3, heads, × 2; FIG. 4, mature achene, × 10.

County: border of sandy woods southeast of Round Gut, southwest of Franklin, no. 11,442. See p. 389.

D. teres, var. hystricina Fern. & Grisc. Essex County: sandy beach of Rappahannock River at Richmond Beach, southeast of Tappahannock, no. 11,621.

Extension inland from coastal sands. See p. 402.

*Richardia scabra L. Dinwiddie County: railroad cinders, scarce, Collier's Yard, 3–4 miles southwest of Petersburg, no. 11,159. Southampton County: weed in sandy field near Blackwater River, Cobb's Wharf, no. 11,160. Nansemond County: roadside bordering swampy woods north of Whitemarsh School, no. 11,161.

A tropical American species, formerly known northward into North Carolina. See pp. 382 and 383.

*Eupatorium tortifolium Chapm. Nansemond County: dry white sand of pine barrens northeast of Sandy Landing, south of South Quay, no. 11,108; similar habitat, near Cathole Landing, west of Factory Hill, no. 11,448.

Extension north from South Carolina. See pp. 384 and 399.

Kuhnia eupatorioides L. To the few recorded Coastal Plain stations add one in Southampton County: dry hickory and oak woods north of Point Beach, south of Franklin, no. 11,453. See p. 398.

*Carphephorus tomentosus (Michx.) T. & G., var. **Walteri** (Ell.), comb. nov. *Liatris Walteri* Ell. Sk. ii. 285 (1822), at least as to plant described. Isle of Wight County: dry sandy pine barrens south of Lee's Mill, no. 12,486. Nansemond County: sandy and peaty pine barrens northeast of Sandy Landing, south of South Quay, no. 11,173.

With typical pilose-leaved *C. tomentosus* and very distinct from it in its glabrous rosettes and only sparsely pubescent stems. Our plant is definitely what Elliott described from eastern South Carolina as *Liatris Walteri* with "leaves lanceolate, acute, glabrous, dotted, attenuate at base", etc., though Elliott made the error of including *Anonymos uniflorus* Walt. Elliott's note that "This plant appears to form an intermediate species between *L. Bellidifolia* and *Tomentosa*" is significant, but I find little to place it near *Carphephorus bellidifolius;* its characters, except for the glabrous lower leaves, place it with *C. tomentosus.* The late Henry W. Ravenel sent it to Gray as *Liatris Walteri* from Santee Canal and the late M. A. Curtis thus correctly identified

his material from the region of Wilmington, North Carolina. See p. 384.

Solidago fistulosa Mill. Our most inland station is in Southampton County: low woods, very scarce, near the pond, Windman's Mill, south of Sunbeam, no. 11,464. From here eastward it becomes progressively more abundant.

S. Elliottii T. & G. (typical). To the single Virginian station, in Henrico County, recorded in 1939, add the following, in Nansemond County: clearings and borders of wet woods north of Whitemarsh School, nos. 10,831 and 11,625; swampy depressions in pine barrens east of Cox Landing, south of South Quay, no. 10,832; sphagnous savannah-like swale east of Cherry Grove, south of South Quay, nos. 11,463 and 11,626.

S. ulmifolia Muhl. Extending into the Coastal Plain in Charles City County: dry wooded bank of James River at "Four Oaks", below Harrison Point, no. 11,461.

A Synopsis of Boltonia (Plates 640–646).—In September, 1933, on my first trip to Virginia, Mr. Ludlow Griscom and I collected on the tidal marshes of North Landing River a *Boltonia* which did not readily work out by existing treatments of the group. In studying it we found other difficulties in the genus and then prepared a tentative outline of the more significant characters. The completion and publication of this study was delayed until the identity of some types, including those of *Matricaria asteroides* L., basinym of *B. asteroides* (L.) L'Hér., and of *Chrysanthemum carolinianum* Walt., referred by Gray to the synonymy of *B. asteroides*, could be established. The Walter type has not been found; but a sheet compared by Mr. C. A. Weatherby in October, 1935, and a photograph (our pl. 640, figs. 1 and 2) received from Mr. Savage in November of that year clearly settle that *Matricaria asteroides* L. is, as Mr. Griscom and I inferred from the Linnean diagnosis and the source of the type, "Pensylvania", not the wide-ranging series with broad leafy corymbs, extending westward to Illinois and beyond, as Gray inferred, but a local plant chiefly of the Atlantic States, with its chief concentration along the Susquehanna River in Pennsylvania and Maryland, though perhaps extending to northern Ohio, and known from western North Carolina; also with a geographic variety, the true *B. glastifolia* (Hill) L'Hér. (our pl. 641), extending from southern New Jersey along the

coastal areas to Louisiana. Some other conclusions reached by Griscom and me in the winter of 1933–34 are supported by additional collections; other conclusions are altered through new evidence. For instance, the commoner species of southeastern Virginia (PL. 642), tall (up to 2.3 m. high), with small mostly white-rayed heads on the loosely paniculate branches, then not known to us, closely matches Walter's account of his *Chrysanthemum carolinianum* from the region of Charleston; and, fortunately, a collection made by Mr. Robert K. Godfrey in Berkeley County, South Carolina, in September, 1939, is quite like the plant of southeastern Virginia. We are, therefore, safe in considering it Walter's species, the type of which is presumably lost. In many points the outline prepared seven years ago is here adopted, with real regret that his other duties prevent my associate in the original study from continuing it at this time. The two coastwise species (*B. asteroides* and an undescribed one of southeastern Virginia and South Carolina, PL. 643), with broad disks and long lilac ligules, often produce, even at flowering time, well defined subterranean stolons; the tall southeastern species with small usually white-rayed heads (*Chrysanthemum carolinianum* Walt.) has a mass of fibrous roots, with no elongate stolons, at most producing sessile or subsessile superficial basal offsets in late autumn. Similar differences of habit apparently exist in the species of the interior but, most unfortunately, only one or two out of many sheets of specimens of them exhibit carefully dug and washed subterranean parts. Nine-tenths of all the specimens I have seen are hastily broken or snatched fragments without bases. Until properly collected and intelligently laid-out specimens of these plants are available their treatment must be necessarily tentative.

In this study I have been greatly aided by the use of the local material of the Academy of Natural Sciences of Philadelphia, most kindly sent me for examination by Mr. Long.[1]

[1] The following key, like many others published in recent years in my revisionary papers, was made primarily for use in a new edition of Gray's Manual. In some instances such keys published in the past have subsequently appeared (without serious alteration of even minor details) in books COPYRIGHTED by others. If compilers of such books like my keys, the product of weeks or months of concentrated study and of tedious measurements, it is hoped that they will not attempt to place me in the eventual position of having to acknowledge my own work as taken from their copyrighted books.

a. Phyllaries (involucral bracts) linear to linear-attenuate or subulate, 0.2–0.75 (rarely –1) mm. broad; disk 3–8 mm. broad; awns wanting or up to ⅔ as long as achene, shorter than disk-corolla .... *b.*

b. Phyllaries 0.5–1 mm. broad, not long-attenuate nor subulate; ligules 0.8–1.5 cm. long, lilac or purplish; heads few, on strongly ascending to erect naked or few-bracted peduncles; plant often spreading by elongate stolons ..... 1. *B. asteroides.*

b. Phyllaries 0.2–0.4 (rarely –0.5) mm. broad, long-attenuate to linear-subulate; ligules 5–8 mm. long, white or lilac; heads numerous, more or less diffusely paniculate or corymbose .... *c.*

c. Involucre of 2–3 closely imbricated often subequal series of phyllaries, not often extending down the peduncles as bracts; peduncles 0.5–5.5 cm. long; achenes wingless or only narrowly margined .... *d.*

d. Diffusely panicled, the flowering branches and elongate (mostly 1.5–5.5 cm. long) peduncles spreading to loosely ascending; awns wanting or minute (about 0.1 mm. long); achenes narrowly cuneate-obovate. Base without elongate stoloniferous offshoots; leaves subtending flowering branches narrowly lanceolate to linear-oblanceolate, attenuate to both ends; ligules 5–7 mm. long, white (rarely lilac); disks 3–5 mm. broad; anthers included; awns about 0.1 mm. long ..... 2. *B. caroliniana.*

Base bearing elongate stolons; leaves subtending flowering branches narrowly obovate to broadly oblanceolate; ligules 7–8 mm. long, lilac; disks 5–8 mm. broad; anthers soon exserted; awns wanting or nearly so ..... 3. *B. Ravenelii.*

d. Strongly corymbose, the leafy corymb with very many erect branches and short peduncles (0.5–2.5 cm. long); awns 0.7–1 mm. long, ½–⅔ as long as the broadly obovate achene .... 5. *B. latisquama,* var. *microcephala.*

c. Involucre of 3–5 unequal series, the lower commonly merging down the peduncle with the numerous small bracts; peduncles stiff and straight, many of them 2.5–15 cm. long; disks 3–5 mm. broad; achenes mostly broadly winged ..... 4. *B. diffusa.*

a. Phyllaries (at least the larger) oblong to rhombic or cuneate-obovate, 0.5–2 mm. broad; disk 7–15 mm. broad; awns nearly or quite as long as the obovate achenes, about equaling disk-corollas, mostly 1–2 mm. long; coarse plant with leafy corymb; ligules lilac or white, 1–1.8 cm. long ..... 5. *B. latisquama.*

1. B. ASTEROIDES (L.) L'Hér. (PLATE 640). Slender, simple or with loosely ascending branches, 2–7 dm. high, with basal offsets and stolons developed in autumn; leaves submembranaceous, linear to oblong-lanceolate or oblanceolate, broad-based, scarcely petioled, the principal ones 2.5–12 cm. long and 3–13 mm. broad; heads 1–23, usually few, on loosely ascending to erect naked or few-bracted peduncles 2.5–11 cm. long; involucre of 2–3 series of subequal linear phyllaries 0.5–1 mm. broad; ligules lilac or pur-

Photo. H. G. Fernald.

Boltonia caroliniana: fig. 1, plant, × 2/5; fig. 2, flowering head, × 2; fig. 3, fruiting heads, × 2; fig. 4, mature achene, × 10.

Photo. H. G. Fernald.

BOLTONIA RAVENELII: FIG. 1, original *Ravenel* material, × 2/5, TYPE at left; FIGS. 2, 3 and 5, heads, × 2; FIG. 4, mature achene, × 10.

plish, 0.8–1.5 cm. long; disk 6–8 mm. broad; achenes obovate, thick-rimmed, about 2 mm. long, the awns wanting or up to 0.7 mm. long.—Sert. Angl. 27 (1788). *Matricaria Asteroides* L. Mant. 116 (1767).—Northwestern New Jersey, eastern Pennsylvania and northern Maryland; western North Carolina; perhaps also northern Ohio. NEW JERSEY: low woods, Brighton, Sussex County, September 4, 1910, *Mackenzie*, no. 4778; border of pond east of Swartswood Lake, Sussex County, August, 1911, *Mackenzie*, no. 4922; muddy calcareous shores and flats, Shyster Pond, Warren County, July 24, 1920, *Mackenzie*. PENNSYLVANIA: TYPE (photograph in Gray Herb., our PLATE 640, FIG. 1) of *Matricaria Asteroides* L., cult. at Upsala from material sent by Bartram from Pennsylvania (*"Habitat* in Pennsylvania. *Barthram"*); banks of Susquehanna, Harrisburg, August, 1858, *Porter;* same locality, without date, *Martindale;* banks of Susquehanna, Lancaster County, August 20, 1862, *Porter* (with memorandum: "quite frequent on the rocky banks and islands of the Susquehanna from Harrisburg southward")—the preceding specimens distributed as *B. glastifolia;* Foster's Island, Harrisburg, August 10, 1888, *Porter;* river-bank, Harrisburg, July 9, 1888, *Small;* islands, York Furnace, September, 1892, *Jos. Crawford;* rocky pools on Bair's Island, York Furnace, June 18–23, 1896, *MacElwee;* mouth of Tucquan, Lancaster County, September, 1892, *A. A. & E. G. Heller*, no. 595; McCall's Ferry, September 5, 1892, *S. Brown*, July 17, 1903, *S. Brown & B. H. Smith.* MARYLAND: rocky islands of Susquehanna River, Conowingo, Cecil County, July 29–31, 1924, *Jos. Crawford;* Havre de Grâce, September 1, 1906, *Long;* ¼ mile south of Havre de Grâce, July 19, 1902, *G. H. Shull*, no. 75. NORTH CAROLINA: sandy roadside, near summit of divide, south of Tuxedo, Henderson County, August 22, 1927, *Wiegand & Manning*, no. 3232.

Two collections from northern OHIO (bay shore, Sandusky, September 28, 1898, *E. L. Moseley*, and Continental, Putnam County, October 1, 1883, *H. A. Young*) seem like the Susquehanna plant but the material is inadequate.

That true *Boltonia asteroides*, as shown by the TYPE, the specimen in the Linnean Herbarium described in Species Plantarum (our PLATE 640, FIGS. 1 and 2), is the slender species of the Susquehanna Valley, eastward into northwestern New Jersey, is apparent, although the name has erroneously been made to cover an assemblage of broadly corymbose and very leafy plants extending westward into the Prairie States. Details of the local eastern species are shown in PLATE 640.

In PLATE 640, FIGS. 1 and 2 are portions, × 1, of the Linnean TYPE of *Matricaria Asteroides*, enlarged from a photograph received from Mr. S. SAVAGE; FIG. 3, two heads, × 2, from Harrisburg, Pennsylvania, August, 1858, *Porter;* FIG. 4, partly denuded receptacle (split), with mature fruit, × 2, from same specimen as FIG. 3; FIG. 5, achene, × 10, from mouth of Tucquan, Lancaster County, Pennsylvania, *Heller & Heller,* no. 575.

Typical *Boltonia asteroides* was early in European botanic gardens, probably derived from the Pennsylvania material sent by Bartram to Linnaeus. A beautiful sheet of it (somewhat overgrown in cultivation) is in the Gray Herbarium, collected by Jacques Gay from plants cultivated in Paris in 1822; and old specimens from other European gardens are there represented.

Near the coast, on muddy shores or in tidal marshes (see p. 396) from southern New Jersey to Louisiana, *Boltonia asteroides* becomes stiffer, with firmer leaves and taller stems, and with more promptly stoloniferous habit. In this plant the principal leaves are narrowed into petiolar bases and the stiffer and straighter peduncles are often more bracteolate. Some specimens of this coastwise plant are a good match (taking into account the fact that it had been in cultivation) for the original plate of *Matricaria glastifolia* Hill, basinym of *B. glastifolia* (Hill) L'Hér. This wider-spread variety becomes

*B. ASTEROIDES (L.) L'Hér., var. **glastifolia** (Hill), comb. nov. (PLATE 641). Freely stoloniferous, the stems up to 1.2 m. high, slender, with erect or ascending branches; leaves coriaceous, the lower narrowly lanceolate or oblanceolate, acuminate or acutish, narrowed to subpetiolar bases; peduncles often more bracteate; awns of achenes well developed.—*Matricaria glastifolia* Hill, Hort. Kew, 19, t. 3 (1769). *B. glastifolia* (Hill) L'Hér. Sert. Angl. 27 (1788).—Southern New Jersey to Louisiana, local. NEW JERSEY: Bennett, Cape May County, September 4, 1907, *Van Pelt;* bog north of creek, Green Creek, Cape May County, August 15, 1909, *Van Pelt;* low ground along railroad, Rio Grande, Cape May County, September, 1911, *O. H. Brown;* clay-bottomed bog, Cold Spring, Cape May County, August 30, 1917, *Gershoy,* no. 701, June 23, 1939, *F. C. Schmid, Jr.* DELAWARE: bogs, Felton, September 25, 1873, *A. Commons;* bogs, Ellendale, August 16, 1877, *A. Commons;* moist open sandy depression east of Ellendale, September 5, 1925, *Pennell,* no. 12,872. VIRGINIA: tidal marsh along Chickahominy River about 5 miles west of Toano, James City County, August 13, 1939, *R. W. Menzel,* no. 311; fresh tidal marsh of Chickahominy River, below Barrat's Bridge (or Ferry), James City County, September 19, 1939, *Fernald & Long,* no. 11,466; brackish marsh of North Landing

River, Pungo Ferry, Princess Anne County, September 22, 1933, *Fernald & Griscom*, no. 2914; Northwest, Norfolk County, September 6, 1893, *Heller*, no. 1248. North Carolina: ditch near Old Dock, Columbus County, August 29, 1938, *Godfrey*, no. 6337. South Carolina: Santee Canal, September, —, *H. W. Ravenel*. Georgia: edge of nearly fresh marshes of Altamaha River, just below Darien, McIntosh County, September 17, 1903, *Harper*, no. 2003. Louisiana: without stated locality, *E. Hall*.

In plate 641, fig. 1 is a plant, × 2/5 from below Barrat's Bridge, James City County, Virginia, *Fernald & Long*, no. 11,466; figs. 2 and 3, heads, × 2, from no. 11,466; fig. 4, achene, × 10, from Pungo Ferry, Princess Anne County, Virginia, *Fernald & Griscom*, no. 2914.

2. *B. **caroliniana** (Walt.), comb. nov. (Plate 642). Very tall, up to 2.3 m. high, from fibrous roots, without elongate stolons, freely branched with wide-spreading to subascending long paniculate branches; early (soon dropping) lower leaves broadly oblanceolate, membranaceous and blunt; principal cauline leaves at flowering time submembranaceous, lanceolate to linear-oblanceolate, tapering to apex and petiolar base; paniculate branches up to 7 dm. long, leafy, diffusely forking; peduncles filiform, 1.5–4.5 cm. long; involucre of 2–3 close series, the linear-subulate phyllaries only 0.2–0.3 mm. broad; ligules white (rarely lilac), 5–7 mm. long; disks 3–5 mm. broad; achenes narrowly cuneate-obovate, narrow-rimmed; awns minute, about 0.1 mm. long.—*Chrysanthemum Carolinianum* Walt. Fl. Carol. 204 (1788).—Rich and damp soil, southeastern Virginia and eastern South Carolina. Virginia: thicket at margin of exsiccated old mill-pond in Swift Creek, Lakeview, Chesterfield County, September 16, 1938, *Fernald & Long*, no. 9470; alluvial woods, upper terrace of Nottoway River, southwest of Burt, Sussex County, September 20, 1937, *Fernald & Long*, no. 7678; alluvial woods, Nottoway River, southwest of Lambs, Sussex County, September 20, 1937, *Fernald & Long*, no. 7679; bushy swale 1½ miles east of Stony Creek, Sussex County, August 24, 1938, *Fernald & Long*, no. 9187; swale at border of woods, 4 miles south of Stony Creek, August 19, 1936, *Fernald, Griscom & Long*, no. 6716; same station, October 18, 1936, *Fernald & Long*, no. 6716*a* (fruiting branchlets); swampy woodroad northeast of Gaskins, Greensville County, August 29, 1939, *Fernald & Long*, no. 11,180; argillaceous and siliceous alluvium, bottomland of Nottoway River near Courtland, Southampton County, June 23, 1936, *Fernald, Long & Smart*, no. 5936 (young foliage); sandy wooded bottomland of Nottoway River, Courtland, August 25, 1936, *Fernald & Long*, no. 6717; wooded bottomland of Meherrin River, near Haley's Bridge, Southampton County, August 19, 1938, *Fernald & Long*, no. 9186. South Carolina:

Cooper River, Berkeley County, October, 1847, *Cranmore Wallace;* clearing along logging railroad, floodplain forest, along Santee River, 3 miles northeast of Pineville, Berkeley County, September 11, 1939, *Godfrey,* no. 8155.

This tall and paniculately branched species, with usually white ligules, the lanceolate leaves attenuate to base and commonly to apex, agrees far better than other Atlantic-slope species with Walter's description of his *Chrysanthemum carolinianum.* Walter's account was as follows:

Carolinianum 1.	foliis lanceolatis integris utrinque acuminatis laevibus, caule 5 ad 6-pedali ramosissimo, floribus radio albis disco luteo.

Walter lived on Santee River. We now have two collections of the tall much branched plant with leaves "utrinque acuminatis" and with white rays from that region. Even if the Walter type is never found the identification seems quite safe.

In PLATE 642, FIG. 1 is a plant, × 2/5, from east of Stony Creek, Sussex County, Virginia, *Fernald & Long,* no. 9187; FIG. 2, flowering head (white ligules scarcely showing), × 2, from no. 9187; FIG. 3, fruiting heads, × 2 from south of Stony Creek, *Fernald & Long,* no. 6716[a]; FIG. 4, achene, × 10, from no. 6716a.

3. *B. **Ravenelii** Fernald & Griscom, sp. nov. (TAB. 643), planta 2–8 dm. alta paniculato-ramosa basi stolonifera; foliis primariis membranaceis anguste obovatis vel late oblanceolatis obtusis vel subacutis basi subpetiolatis 6–10 cm. longis 1–3 cm. latis; paniculis elongatis subcylindricis 1.5–5.5 dm. longis 1–1.8 dm. diametro, ramis patento-adscendentibus foliosis paucifloris; pedunculis sparse bracteolatis rectis 2–5 cm. longis; phyllaribus lineari-subulatis 0.2–0.4 mm. latis 2–3-seriatis; ligulis lilacinis 7–8 mm. longis; disco 5–8 mm. lato; antheris deinde exsertis; achaeniis vix aristatis.—Rich bottomland woods, very local, southeastern Virginia and eastern South Carolina. VIRGINIA: wooded bottomland of Fontaine Creek, southwest of Haley's Bridge, Greensville County, October 11, 1938, *Fernald & Long,* no. 9642. SOUTH CAROLINA: Santee Canal, September, 1846, *H. W. Ravenel;* rich swamps, Santee Canal, October, —, *Ravenel* (TYPE in Herb. Gray).

A very little known species. The two Ravenel specimens, sent to Asa Gray more than 90 years ago, and the single collection from southeastern Virginia are consistent in their thin and broad leaves, stiffly ascending peduncles, very small involucres,

Photo. H. G. Fernald.

BOLTONIA DIFFUSA, var. INTERIOR: FIG. 1, TYPE, × 2/5; FIGS. 2 and 3, heads, × 2; FIG. 4, mature achene, × 10.

Photo. H. G. Fernald.

Boltonia latisquama: figs. 1 and 2, portions of type, × 1; fig. 3, flowering head, × 2; fig. 4, fruiting head. × 2; fig. 5, mature achene, × 10.

lilac ligules and awnless achenes. The Virginia material, collected very late in the season, has most of the anthers exserted, and this unusual character shows in the older heads of the Ravenel material.

In PLATE 643, FIG. 1 is the original Ravenel material, × 2/5, the TYPE of *B. Ravenelii* at the left; FIGS. 2 and 3, heads, × 2, from the TYPE; FIG. 4, achene, × 10, from the TYPE; FIG. 5, heads, showing exserted anthers, × 2, from Fontaine Creek, southwest of Haley's Bridge, Greensville County, Virginia, *Fernald & Long,* no. 9642.

4. B. DIFFUSA Ell. Very slender, from subterranean rhizomes and stolons, 0.5–1 m. high, the stem 1.5–3 mm. thick at base, diffusely open-paniculate; leaves coriaceous, linear-subulate to broadly linear, only the few lowest dilated, the upper and those of the prolonged simple or only remotely forking ascending branches greatly reduced; peduncles filiform, many-bracteolate, straightish, 2.5–15 cm. long; heads small, remote; involucre of 3–5 unequal series, the lower phyllaries commonly merging down the peduncle into the numerous small bracts; phyllaries linear-subulate, 0.2–0.5 mm. broad; ligules white or lilac, 5–8 mm. long; disk 3–5 mm. broad; achenes cuneate-obovate, broadly winged, the awns about ¼ as long.—Sk. ii. 400 (1823).—Florida and southwestern Georgia to Arkansas, Oklahoma and eastern Texas. FLORIDA: hammock, Okeechobee Region, Brevard Co., October 26, 1903, *Fredholm*, no. 6151; cypress-head, Kelsey City, Palm Beach County, December 16, 1920, *Small, DeWinkeler & Rane*, no. 9814; moist rich soil, swamp, Juno, Palm Beach County, March 7, 1921, *F. R. Randolph*, no. 78; cypress swamp, vicinity of Fort Myers, Lee County, May 22, 1916, *J. P. Standley,* no. 199; river-swamps, Apalachicola, *Biltmore Herb.*, no. 142*b*. GEORGIA: wet pine barrens, Sumter County, September 8, 1900, *Harper,* no. 616; damp pine barrens near Leesburg, August 30, 1901, *A. H. Curtiss*, no. 6893. MISSISSIPPI: Mendenhall, August 20, 1903, *Tracy*, no. 8538; Deer Island, August 25, 1891, *Seymour & Earle*, no. 191; Deer Island, October 12, 1895, *Tracy*, no. 4778. ARKANSAS: roadside ditch near Hot Springs, August 3, 1935, *F. J. Scully,* no. 66. LOUISIANA: Covington, *T. Drummond,* no. 67; open dry soil, south edge of Hammond, Tangipahoa Parish, June 30, 1938, *D. S. & H. B. Correll*, no. 9256; damp soils, western Louisiana, *Josiah Hale;* moist soil along canal, near Holmwood, Calcasieu Parish, July 18, 1938, *Correll & Correll,* no. 9577. OKLAHOMA: along small streams, San Bois Mts., 1891, *C. S. Sheldon,* no. 280. TEXAS: Dallas, 1873, *Reverchon,* no. 233; Houston, September 14, 1913, *G. L. Fisher;* neglected field, Montgomery Co., July 18–21, 1909, *R. A. Dixon*, no. 492; ponds, Hempstead, June 6, 1872, *E. Hall*, no. 308.

Boltonia diffusa is here taken up in its traditional sense, although Elliott's type has not been studied. The range is usually stated as extending northward into South Carolina. I have seen no material, however, from north of northern Florida and southwestern Georgia, and I am inclined to the interpretation that authors have merely assumed that Elliott's species was described from South Carolina. Elliott's very detailed account states, fortunately, that his species "Grows in damp rich soils between the Chatahouchie and Alabama", *i. e.* somewhere between southwestern Georgia and northwestern Florida and western Alabama. Characteristic material is known from Sumter and Lee Counties, Georgia, in the drainage area of Flint River, which, at the extreme southwest corner of the state, joins the Chattahoochie to form Appalachicola River, whence *B. diffusa* is also known. Until authentic material from South Carolina is known, that state may well be omitted from the range.

Much of the material from the Mississippi valley differs from typical *Boltonia diffusa* in its coarser habit, much more branching stems and rather shorter and stiffer peduncles. Its bases are rarely collected, but the few seen usually show no stolons. This is

B. DIFFUSA Ell., var. **interior** Fernald & Griscom, var. nov. (TAB. 644), plerumque estolonifera; caulibus 0.6–1.2 m. altis basi 4–7 mm. crassis paniculato-ramosis, ramibus plerumque valde ramuliferis; pedunculis crassis; phyllaribus lineari-oblongis apice vix subulatis. KENTUCKY: weed in field, northeast of Murray, Calloway County, July 19, 1937, *Smith & Hodgdon*, no. 4078. TENNESSEE: dry oak barrens, alt. 1100 feet, Tullahoma, Coffee County, August 24, 1930, *Svenson*, no. 4257 (transition in phyllaries to typical *B. diffusa*, branching and fibrous roots of the var.). MISSISSIPPI: old field near Jackson, September 6, 1885, *John Donnell Smith:* Cat Island, August, 1900, *Tracy*, no. 485. ILLINOIS: Odin, 1860, *Geo. Vasey;* De Soto, August, 1862, *Vasey* (TYPE in Herb. Gray). MISSOURI: Springfield, August 31, 1888, *Blankinship.* ARKANSAS: waste, level cotton-land, Brinkley, Monroe County, August 28, 1934, *Delzie Demaree*, no. 10,858; bottoms, Arkansas River, Pine Bluff, October 24, 1931, *Demaree*, no. 8786; Texarkana, Miller County, September 8, 1898, *A. A. & E. G. Heller*, no. 4229 (transitional). OKLAHOMA: near edge of pond in woods, near Copan, Washington County, August 15, 1913, *G. W. Stevens*, no. 2094, as *B. latisquama.*

Var. *interior* is a perplexing plant, in its less extreme develop-

ment clearly belonging near if not with *Boltonia diffusa,* but in extreme forms approaching small-headed extremes of *B. latisquama.* Fuller material, especially with carefully collected root-systems, is important to clarify the relationship here.

In PLATE 644, FIG. 1 is the TYPE, × 2/5, of *Boltonia diffusa,* var. *interior;* FIG. 2, heads, × 2, from TYPE; FIG. 3, mature head, × 2, from Tullahoma, Tennessee, *Svenson,* no. 4257; FIG. 4, achene, × 10, from no. 4257.

5. B. LATISQUAMA Gray (PLATE 645). Coarse, 0.7–1.5 m. or more high, the base apparently not stoloniferous; stem strongly corymbose-paniculate and leafy, conspicuously corrugated; leaves firm, the primary ones lanceolate, those of the corymbose branches linear-attenuate and much smaller; peduncles leafy-bracted, 1.5–5 cm. long; involucre of about 3 series of firm narrowly cuneate- to spatulate-obovate short-tipped phyllaries 1–2 mm. broad; ligules white or lilac, 1–1.8 cm. long; disk 7–14 mm. broad; achenes obovate, 2.5–3 mm. long, broad-winged; awns 1.5–2 mm. long.—Am. Journ. Sci., ser. 2, xxxiii. 238 (1862).—Prairies and banks of streams, Missouri, Kansas and Oklahoma, probably Texas; escape from cultivation eastward to New England.

In PLATE 645, FIGS. 1 and 2 are portions of the TYPE, × 1, from near the mouth of the Kansas River, *Parry;* FIG. 3 is a characteristic head, × 2, from Baker, Lincoln County, Oklahoma, August 25, 1895, *Blankinship;* FIG. 4, a fruiting head, × 2, from material cultivated by Gray in the Harvard Botanic Garden, October, 1865; FIG. 5, an achene, × 10, from the latter.

Var. OCCIDENTALIS Gray. Clearly stoloniferous; leaves larger and blunter; peduncles mostly naked; phyllaries more pointed. —Syn. Fl. i^2. 166 (1884). *B. occidentalis* (Gray) Howell, Fl. Nw. Am. i. 305 (1897).—Bottomlands, Union County, Oregon.

When better known, var. *occidentalis* may prove to be a distinct species. Howell in elevating it to specific rank added no new characters and gave no reason for separating it.

Var. **recognita** Fernald & Griscom, var. nov. (TAB. 646), foliis caulinis valde evolutis oblanceolatis vel lanceolatis; corymbis ad 4 dm. latis foliosis; phyllaribus anguste oblongis 0.5–1.3 mm. latis; disco 0.7–1.5 cm. latis; ligulis 1–1.8 cm. longis.—*B. asteroides* sensu Am. auth., non (L.) L'Hér.—Michigan to Manitoba and North Dakota, south to Kentucky, Missouri and Kansas; naturalized in New England and New Jersey. TYPE: Fort Snelling, Minnesota, August 20, 1891, *E. A. Mearns* (Herb. Gray).

Boltonia latisquama, var. *recognita* is the tall plant of woods and prairies, with broad corymbs of large heads, which has been

passing erroneously as *B. asteroides*. It seems, phylogenetically, to be the main variety of *B. latisquama*, of which typical *B. latisquama* is an extreme development in the drier prairies and plains. Var. *decurrens* seems to differ from the wide-ranging var. *recognita* only in its decurrent leaves, while var. *microcephala* is a small-headed extreme somewhat approaching *B. diffusa*, var. *interior* and perhaps mixing with it.

In PLATE 646, FIGS. 1 and 2 are portions of the TYPE of var. *recognita*, × 1; FIG. 3, a head, × 2, from the TYPE.

Var. **decurrens** (Torr. & Gray) Fernald & Griscom, comb. nov. *B. glastifolia* β. ? *decurrens* Torr. & Gray, Fl. N. Am. ii². 188 (1842). *B. decurrens* (Torr. & Gray) Wood, Bot. and Florist, 166 (1870). *B. asteroides*, var. *decurrens* (Torr. & Gray) Engelm. in Gray, Syn. Fl. i². 166 (1884).—Bottomlands of Illinois and Missouri.

Var. **microcephala** Fernald & Griscom, var. nov. (TAB. 646), var. recognitae simillima; foliis primariis oblongis vel oblanceolatis 0.6–1.5 dm. longis; pedunculis 0.5–2.5 cm. longis; phyllaribus lineari-subulatis vel -lanceolatis 0.3–0.4 mm. latis; ligulis 5–8 mm. longis albidis; disco 5–8 mm. lato; achaeniis 1.5–2 mm. longis; aristis ca. 1 mm. longis.—Wisconsin, Illinois, Minnesota and Iowa. WISCONSIN: St. Croix Falls, August 1, 1900, *C. F. Baker*. ILLINOIS: along Illinois Central Railroad, south of Harvey, Cook County, August 30, 1893, *S. H. Burnham* (TYPE in Herb. Gray); wet bottoms, Urbana, *Gleason*, no. 1961; low wet soil near Creek, Vienna, August 9, 1902, *Gleason*, no. 2741; Fox Bottom, near Mud River, August 18, 1914, *Robert Ridgway;* MINNESOTA: Lake City, August 15, 1883, *W. H. Manning;* beach, Shakopee Lake, Louriston Township, Chippewa County, August 5, 1930, *Hotchkiss & Jones*, no. 362. IOWA: wet places, Johnson County, August, 1895, *T. J. Fitzpatrick*.

In PLATE 646, FIG. 4 is a group of mature heads, × 2, from the TYPE of var. *microcephala;* FIG. 5, an expanded head, × 2, from TYPE; FIG. 6, an achene, × 10, from TYPE.

ASTER GRANDIFLORUS L. Our northernmost station is in KING WILLIAM COUNTY: argillaceous roadside thicket northwest of King William Courthouse, no. 11,630.

*A. TATARICUS L. f. CHARLES CITY COUNTY: escaped to dry roadside thicket, Holdcroft, no. 11,631.

*A. UMBELLATUS Mill., var. **brevisquamus,** var. nov. (TAB. 647, FIGS. 1–4), caulibus ad 1.4 dm. altis; foliis lanceolato-ellipticis vel anguste ovatis glabris; involucris 2.5–4 mm. altis, phyllaribus 4–5-seriatis valde inaequalibus mediis linearioblongis obtusis ca. 0.5 mm. latis; ligulis 4–7 mm. longis.—Bogs

and swamps, District of Columbia and eastern Virginia. DISTRICT OF COLUMBIA: swamp, Terra Cotta, September 29, 1897 and September 3, 1915, *Th. Holm.* VIRGINIA: sphagnous springy swales bordering Whiteoak Swamp, west of Elko Station, Henrico County, August 17, 1938, *Fernald & Long,* no. 9192; argillaceous and siliceous boggy depressions, about 3 miles southeast of Petersburg, at head of Poo Run, Prince George County, October 18, 1936, *Fernald, Long & Smart,* no. 6894 (TYPE in Herb. Gray; ISOTYPE in Herb. Phil. Acad.).

Typical *Aster umbellatus* Mill., ranging from Newfoundland to northern Ontario, south to western North Carolina, Ohio, Indiana and Illinois, has the involucre (FIGS. 5–7, all × 4) 4–5 mm. high, of gradually lengthening narrow linear-lanceolate acute or obtuse phyllaries, those of the median series nearly equaling the inner ones. Commonly with lanceolate or lance-oblong leaves, it may have them relatively short and broad (elliptic to lance-ovate). The latter individuals are *A. humilis* Willd., small plants sent to Berlin from Pennsylvania but (as shown by Muhlenberg's material and other eastern Pennsylvania broad-leaved plants) scarcely worth even formal designation, although some authors maintain them as a species or as a variety. The most extreme departure from typical *A. umbellatus* in the series with essentially glabrous but often scabrous leaves and gradually lengthening series of narrow phyllaries is the plant of wet cliffs described as *Doellingeria umbellata,* var. *flexicaulis* House. As an extreme departure from the usually stiffly erect plant it is noteworthy but its involucre is not strikingly different and it seems to me a forma rather than a true geographic variety.[20]

Var. *pubens* Gray, chiefly of the region from Upper Michigan to Saskatchewan, south to Iowa and Nebraska, is harsh with scabrous puberulence but otherwise resembles typical *Aster umbellatus.* Its involucres (FIGS. 8 and 9, both × 4) are inclined (in dried material) to be more turbinate and the relatively few phyllaries are very narrow.

On the Coastal Plain, from Florida to Texas, north to North Carolina and Arkansas, occurs *A. umbellatus,* var. *latifolius* Gray, Syn. Fl. N. Am. i^2. 197 (1884). Gray, and most later

[20] ASTER UMBELLATUS Mill., forma **flexicaulis** (House), comb. nov. *Doellingeria umbellata* (Mill.) Nees, var. *flexicaulis* House in N. Y. State Mus. Bull. no. 254: 712 (1924).

authors, confused the really definite plant of the South by citing a synonymy of *sensu* names. Gray's differentiation was based solely on breadth of leaf ("leaves from ovate-lanceolate to ovate, comparatively short, less narrowed or sometimes even rounded at base"; with the significant statement: "Extreme forms seem very different from *A. umbellatus*, having leaves even 2 inches wide by 3 in length"). It is thus clear that Gray had a broad-leaved southern plant primarily in mind, but he failed to note the distinctive involucre and consequently included any plants with "ovate-lanceolate leaves" and extended the range north to Pennsylvania and New Jersey. The first synonym was *A. humilis* Willd. Sp. iii. 2038, which, as already noted, is only a low and broad-leaved phase of typical *A. umbellatus*, although Willdenow so little understood his own *A. humilis* as to publish in 1806 in Hort. Berol. t. 67, a beautiful plate of *A. infirmus* Michx. as *A. humilis!* Gray's next synonyms under *A. umbellatus*, var. *latifolius* were *A. amygdalinus* sensu Bertoloni (1847) and *Doellingeria amygdalina* Nees (1833), "chiefly, excl. syn.", which is a misleading reference since the basinym, *Aster amygdalinus* Lam. Encycl. i. 305, no. 24 (1782) was founded (as shown by a photograph sent from Paris) on very characteristic *A. umbellatus* cultivated at Paris. The other synonym given by Gray under *A. umbellatus*, var. *latifolius* was *Diplopappus cornifolius* sensu Lindl. (1835), not *A. cornifolius* Muhl. ex. Willd. (1804). The synonymy given by Gray, consequently, is too vague to stand as the basis of his new var. *latifolius*, and only *A. humilis* could have been the nomenclatural basis for anything, the others being misapplications of older names by later authors. I am, therefore, taking Gray's name for the plant of the southern Coastal Plain which, alone, was so marked by him in preparing the Synoptical Flora; and, since he specially commented on "Extreme forms . . . very different from *A. umbellatus*, having leaves even 2 inches wide by 3 in length", I am designating as TYPE of var. *latifolius* the specimen he thus signified. This was collected by *Hale* in Louisiana in 1844. Photographs of portions of it, × 1, are shown in PLATE 648, with the characteristic long involucres (5–7 mm. high), with phyllaries 0.8–1.5 mm. broad of it and other specimens shown, × 4. That

Photo. H. G. Fernald.

BOLTONIA LATISQUAMA, var. RECOGNITA: FIGS. 1 and 2, portions of TYPE, × 1; FIG. 3, head, × 2.

Var. MICROCEPHALA: FIG. 4, group of mature heads, × 2; FIG. 5, expanded head, × 2; FIG. 6, mature achene, × 10.

Photo. H. G. Fernald.

ASTER UMBELLATUS: FIGS. 5–7, head and involucres, × 4.
Var. BREVISQUAMUS: FIG. 1, portion of TYPE, × 1; FIGS. 2–4, heads and involucre, × 4.
Var. PUBENS: FIGS. 8 and 9, involucres, × 4.

A. umbellatus, var. *latifolius*, as thus cleared of its encumberances, is a very distinct variety of the South will be apparent.

In PLATE 647, FIG. 1 is a portion of the TYPE, × 1, of *Aster umbellatus*, var. *brevisquamus;* FIG. 2, a head, to show involucre, × 4, from the TYPE; FIG. 3, head, × 4, from Elko Station, Virginia, *Fernald & Long*, no. 9192; FIG. 4, involucre, × 4, from Terra Cotta, District of Columbia, *Holm*. FIG. 5 is a head, × 4, of typical *A. umbellatus* from Ithaca, New York, *C. C. Thomas*, no. 5226; FIG. 6, involucre, × 4, from Randolph, New Hampshire, *A. H. Moore*, no. 348; FIG. 7, involucre, × 4, from Kennebunkport, Maine, September, 1894, *Grace Gilbert*. FIG. 8 is an involucre, × 4, of var. *pubens*, from the TYPE, Saskatchewan, *Bourgeau;* FIG. 9, involucre, × 4, from Madison, Wisconsin, August 30, 1893, *Churchill*.

In PLATE 648, FIGS. 1 and 2 are portions of the TYPE, × 1, of *A. umbellatus*, var. *latifolius;* FIG. 3, involucre, × 4, from TYPE; FIG. 4, involucre, × 4, from Alabama, *Gates;* FIG. 5, involucre, × 4, from Gateswood, Alabama, *Tracy*, no. 8587; FIG. 6, involucre, × 4, from Georgia, September 30, 1903, *Mrs. Taylor*.

ERIGERON VERNUS (L.) T. & G. Local range extended inland to GREENSVILLE COUNTY: peaty swale by Southern Railway northeast of Emporia, no. 10,441. See p. 360.

E. BONARIENSIS L. To the single station in Norfolk County already reported add from PRINCESS ANNE COUNTY: borders of low woods and clearings along Back Bay, Long Island, no. 11,188; open sandy flats about the Wild Fowl Refuge, near Little Island Life Saving Station, no. 11,189; clearing near old house, Cedar Island, no. 12,489. See p. 389.

*PLUCHEA PURPURASCENS (Sw.) DC. PRINCESS ANNE COUNTY: brackish to fresh marsh along Back Bay, at eastern margin of Long Island, no. 11,190; moist sandy shore, Ragged Island, no. 12,490. See p. 389.

A tropical American species heretofore recorded northward only to the coast of Georgia. The Long Island plant is extreme, with lanceolate leaves cinereous-pilose beneath, the involucre heavily pubescent, its outer phyllaries ovate. Some other collections, from near Hampton, and from tidal shores of the Chickahominy, have narrow leaves but the larger heads and oblong or elliptical outer phyllaries of the common northern *P. marilandica* (Michx.) Cass. Further observation may show that the latter usually broad-leaved and smoother plant may have to be treated as an essentially northern variety of the former. Until I have more field-experience with them in the transition-belt I am not ready so to treat them.

TETRAGONOTHECA HELIANTHOIDES L. To the station in Gloucester County add two in SOUTHAMPTON COUNTY: border of sandy woods southwest of Applewhite's Church, no. 10,447; rich sandy

and loamy woods along Three Creek, northwest of Carey Bridge, no. 10,448. See pp. 356 and 362 and MAP 1.

*RUDBECKIA HELIOPSIDIS T. & G. PRINCE GEORGE COUNTY: borders of dry pine and oak woods 2–3 miles north of Disputanta, nos. 10,837, 11,196 and 11,468.

Very extensive station, the first known outside eastern Alabama and western Georgia. See pp. 375 and 382 and MAP 10.

*R. HELIOPSIDIS T. & G., forma **villipes,** f. nov., petiolis imis villosis.—Prince George County, VIRGINIA: border of dry pine and oak woods 2–3 miles north of Disputanta, July 24, 1939, *Fernald & Long,* no. 10,838, August 17, 1939, no. 11,197 (TYPE in Herb. Gray., ISOTYPE in Herb. Phil. Acad.).

Most of the plants in the large colony belong to *Rudbeckia Heliopsidis* α. of Torrey & Gray, "almost glabrous", originally from Columbus, Georgia. Forma *villipes* is relatively scarce. It was described from Cherokee County, Alabama, by Torrey & Gray as var. β., "stem stouter, pubescent below with spreading, above with appressed hairs." In Prince George County it is at best a minor form.

COREOPSIS ONISCICARPA Fern. The greatest area in Virginia of this species is in southwestern NANSEMOND COUNTY.

There in sphagnous swales and springy, peaty slopes it is often 9 dm. high, single plants bearing 30–60 heads. See p. 399.

Dr. Sherff, in Field Mus. Nat. Hist. Bot. Ser. xvii. 609 (1939), states that "A careful comparison of each specimen [of *C. oniscicarpa* lent him from the Gray Herbarium] with Floridan and other specimens of *C. Linifolia* [capitalization Sherff's] Nutt. showed no constant differences in foliar or capitular characters to warrant separating *C. Oniscicarpa* [capitalization Sherff's] even varietally from *C. Linifolia.*" The involucre with lanceolate outer phyllaries and a series of achenes of *C. oniscicarpa* were shown, from photographs, in RHODORA, xl. pl. 534, figs. 1 and 8, the habit of the plant, × ½, in plate 533.

Coreopsis linifolia Nutt. Journ. Acad. Phila. vii. 75 (1834) was one of several species described *"from the dried specimens in the herbarium of the Academy of Natural Sciences in Philadelphia."* It came from Alabama; and since other Alabama specimens cited in the same paper were collected by Dr. Gates (*Liatris pauciflosculosa* and *L. squamosa*) it is reasonable to

take the series of Alabama sheets from Gates labeled by Nuttall as his own *C. linifolia* and preserved at the Philadelphia Academy as the TYPE series. Other Nuttall types described *"from the dried specimens in the herbarium of the Academy"* are there preserved and it is not probable that the Philadelphia Academy would have transferred them to the British Museum. Sherff, in Field Mus. Nat. Hist. Bot. Ser. xi. 436 (1936), gave for *C. linifolia* "Type specimen: Collected in Alabama (Brit.?)," the queried "Brit." standing for British Museum. On the seemingly safe assumption that the TYPE series is the one at Philadelphia labeled by Nuttall, but with similar specimens of the Gates material also in the Gray Herbarium and in the herbarium of the New York Botanical Garden, I am showing details of the TYPE series, as represented by the Gates specimen in the Gray Herbarium. Since Sherff cites none of the Gates material (except through his note on *C. callosa*), I have felt it justifiable to include some details from other specimens actually cited by him as *C. linifolia.*

In PLATE 649, FIG. 1 is an ISOTYPE (*Gates*), × ½, of *C. linifolia,* labeled by Sherff; FIG. 2, a flowering head, × 2, from the ISOTYPE, showing the broad and blunt outer and inner phyllaries, these conspicuously white-margined; FIG. 3, two plants, × ½, from Gateswood, Alabama, *Tracy,* no. 8565, labeled and cited by Sherff as *C. linifolia;* FIGS. 4, 5 and 6, achenes × 10, from tidal marshes on Biloxi Bayou, Mississippi, September 16, 1885, *John Donnell Smith* (labeled and cited by Sherff as *C. linifolia*).

In *C. linifolia* the relatively large involucre has the ovate white-margined outer phyllaries, to use Sherff's phrase, "ovatae . . . lateribus scariosae, apice subacutae vel rotundatae". The much smaller involucre of the more northern *C. oniscicarpa* (shown, also × 2, in RHODORA, xl. pl. 534, fig. 1) has the outer phyllaries lanceolate, the inner more oblong and not conspicuously white-margined. In the more southern *C. linifolia* the bodies of the achenes are 2.5–3.2 mm. long and 1–1.2 mm. broad; in *C. oniscicarpa* the bodies of the achenes are 1.8–2.2 mm. long and 0.6–0.9 mm. broad. These details of *C. linifolia,* shown in PLATE 649, and the photographic illustrations of *C. oniscicarpa,* already referred to, clearly speak for themselves.

The photographic reproductions of other species, in *Coreopsis* and *Bidens,* all reduced by Sherff in the above cited paper, also speak with complete definiteness.

*Bidens polylepis Blake. Charles City County: clearing in woods and roadside gutter, southeast of Sturgeon Point School, no. 11,203.

Sherff cites no coastwise material from south of Maryland.

*B. coronata (L.) Britton, var. typica Fernald in Rhodora, xl. 349, pl. 506, figs. 4 and 5 (1938). King William County: fresh tidal shore of Mattaponi River, Horse Landing, near King William Courthouse, no. 11,637; similar habitat, northwest of King William, no. 11,638. King and Queen County: similar habitat, Walkerton, no. 11,639. See p. 402.

First from south of lower Delaware; leaves simple to compound; awns of achenes very broad.

*Gaillardia pulchella Foug. Greensville County: sandy roadside south of Emporia, no. 11,205. Henrico County: waste ground and railroad ballast, Richmond, no. 2498. Spread from original cultivation.

*Lapsana communis L. Southampton County: cinders of freight siding, Branchville, no. 10,454. Henrico County: waste ground, Richmond, no. 12,206; embankments and cinders of Chesapeake and Ohio Railroad west of Elko Station, no. 12,207.

Serinia oppositifolia (Raf.) Ktze. Add a station in Greensville County: fallow clay field west of Vincent School, no. 10,455. Also in Southampton County: sandy roadside ditch, southeast of Windman's Mill, no. 12,208.

*Lactuca canadensis L., var. longifolia (Michx.) Farwell. Greensville County: clearing on wooded bottomland of Fontaine Creek, southeast of Taylor's Millpond, no. 10,850.

One of the more northern varieties, not represented in the Gray Herbarium from Atlantic States south of New York and singularly out of place with *Taxodium*, *Crataegus Marshallii*, *Sagittaria Weatherbiana*, *Spiranthes cernua* var. *odorata* and *Amsonia Tabernaemontana*. See p. 368.

*L. floridana (L.) Gaertn., forma **leucantha,** f. nov., corollis albidis.—Sussex County, Virginia: wooded bottomland, Jones Hole Swamp, west of Coddyshore, September 17, 1939, *Fernald & Long*, no. 11,484 (type in Herb. Gray; isotype in Herb. Phil. Acad.).

Prenanthes altissima L. Local range extended southward into Southampton County: rich marly woods along Three Creek, northwest of Carey Bridge, no. 11,486. See p. 363.

(*To be continued*)

Photo. H. G. Fernald.

ASTER UMBELLATUS, var. LATIFOLIUS: FIGS. 1 and 2, portions of TYPE, × 1; FIGS. 3–6, involucres, × 4.

Photo. H. G. Fernald.

COREOPSIS LINIFOLIA: FIG. 1, ISOTYPE, × ½; FIG. 2, head, × 2, from ISOTYPE; FIG. 3, portions of two plants (perhaps topotypes), × ½, from Alabama; FIGS. 4–6, achenes, × 10.

INTERESTING PLANTS OF OKLAHOMA

U. T. Waterfall

In the course of making collections in various parts of the state I have collected several plants which, either because they represent additions to the flora or have seldom been recorded, are of interest.

Aegilops cylindrica Host. I found a number of patches of this introduced grass in and around Oklahoma City during the spring of 1939.

In H. I. Featherly's *Grasses of Oklahoma*[1] it is listed as having been first collected from *Payne County* by Professor Robert Stratton of Oklahoma A. & M. College. Undoubtedly it is spreading rapidly in the state.

Iresine rhizomatosa Standley. The Oklahoma specimens that have been passing as *Iresine celosia*, or *I. paniculata*, should be referred to *I. rhizomatosa*.

The latter is the only species found in this region and, as its name indicates, has horizontal rootstocks running near the surface of the ground. The species to which it has formerly been referred is an annual,[2] but our plant is always a perennial.

Portulaca parvula A. Gray. Our specimens have been previously identified as *P. pilosa* which, according to Rydberg,[3] is tropical only.

Gray undoubtedly knew *P. pilosa* and intended his species to be distinct, but the two have been sadly confused since his time.

Ranunculus laxicaulis (T. & G.) Darby. Damp sandy clay, open woods, two miles southwest of Smithville, *McCurtain County*, No. 685. Collected in spring of 1937.

This is the filiform-stemmed *Ranunculus* that has been erroneously identified in the past as *Ranunculus oblongifolius*.[4] The only other record from Oklahoma of which I know is E. J. Palmer's no. 39,348 determined as *R. oblongifolius* Ell.

Ranunculus longirostris Godr. Growing in water, Yashaw Creek, 3½ miles south of Broken Bow, McCurtain County, No. 668. Collected in the spring of 1937.

[1] H. I. Featherly. Grasses of Oklahoma, Tech. Bull. No. 3, Okla. A. & M. College. Stillwater, Okla. (1938).

[2] J. K. Small, *Manual of Southeastern Flora* p. 477.

[3] P. A. Rydberg, *Flora of Prairies and Plains of Central North America* p. 314.

[4] M. L. Fernald in Rhodora **41**: 541 (1939).

This identification was qualified by the word "probably" by Miss Bernice Schubert of the Gray Herbarium, as the material was not in the best condition for identification. It is a white-flowered *Ranunculus* with floating stems and filiformly dissected leaves.

Oenothera Greggii Gray, var. typica Munz. Found in sandy clay soil on sandstone hillside, prairie, 3 miles south and 7 miles west of Clinton, *Custer County,* No. 1633, identified by P. A. Munz.

Most of the annual vegetation had already died by the time (August 12) this was collected. Growing nearby were such woody-rooted plants as *Oenothera missouriensis* Sims var. *incana* Gray and *Scutellaria resinosa* Torr. with an occasional rather dwarfed specimen of *Bumelia lanuginosa* (Michx.) Pers. I at first thought this to be new to the state as Munz[1] does not list it from Oklahoma.

An examination of the material at the herbarium of the University of Oklahoma shows another specimen collected since Munz's publication. Therefore this collection constitutes an extension of range within the state.

Gaura filiformis Small, var. typica Munz. Growing in moist sand, waste field, 3 miles west of Luther, *Oklahoma County,* No. 1677. Identified by P. A. Munz.

Previously it has not been collected northwest of Arkansas and eastern Texas. My nos. 1779 and 1806, taken about three weeks later from approximately the same locality, match the above except that they are more mature and dry weather had caused many of the leaves to fall.

Gaura parviflora Dougl., var. typica Munz, forma glabra Munz. Sandy clay soil, prairie, 3½ miles west and 2½ north of Oklahoma City, *Oklahoma County,* No. 1346. Identified by P. A. Munz.

Of several collections in this vicinity I have found only the one with glabrous hypanthium.

Ambrosia aptera in Oklahoma.

While trying to identify certain specimens of the plant that we have been calling *A. trifida* great difficulty has been encountered.

[1] P. A. Munz in Am. Journ. Bot. **16**: 709 (1929).

Some of our Sooner State[1] specimens have the stems and pistillate involucres strikingly black-striate and all of them are more or less so.

Rydberg uses this character in his key[2] to set off *A. trifida* from his *A. striata* and *A. variabilis*, but descriptions of *A. aptera* DC. do not mention it. Our specimens all keyed to *A. striata* but because we were outside of its range as given by Rydberg I became dubious as to the identity of our plants.

Accordingly, with the kind cooperation of Dr. H. A. Gleason of the New York Botanical Garden, we obtained on loan the type specimens of Rydberg's *A. striata* and *A. variabilis*, together with abundant material of *A. trifida* and *A. aptera*.

It became immediately clear that our specimens were not referable to *A. striata* as the fruit of this species is narrow, being about three times as long as broad. Otherwise they are similar. Our specimens and those of the borrowed material of *A. trifida* and *A. aptera* all have fruit about twice as long as broad.

The specimens of typical *A. trifida* have no black-striate markings on the stems or pistillate involucres and usually have a softer, wider-spreading pubescence than *A. aptera*.

The latter species has stems and pistillate involucres that are more or less black-striate, and usually has a harsher, rather scabrous pubescence.

All our Oklahoma specimens of *Ambrosia* should therefore be referred to *A. aptera* which, as I see it, can be separated from *A. trifida* only as indicated above.

It is probable that a critical study of *A. aptera*, *A. striata*, and *A. variabilis* as they occur throughout North America will reveal the fact that they should all be reduced to varieties of *A. trifida* but I am unable to make such a study due to insufficient out-of-state material.[3]

TRAGOPOGON PRATENSIS L. Clay soil, Fairgrounds, Oklahoma City, *Oklahoma County*, No. 909. Several specimens were found in an open area about a block wide and two blocks long on the

[1] Oklahoma is called the "Sooner State" because many people began the run on April 18, 1889, before noon which was the official starting time, and thus got to the lands to be occupied by settlers sooner than those who waited ethically until noon.

[2] Rydberg, *Fl. of Pr.* and *Pl.*, p. 764, and in *Fl. N. Am.* xxxiii. pt. 1: 15–22 (1922).

[3] In my own work I am treating *Ambrosia aptera* as *A. trifida*, var. *texana* Scheele in Linnaea, xxii. 156 (1849) = *A. trifida*, var. *aptera* (DC.) Ktze., Rev. Gen. i. 305 (1891).—M. L. F.

southwest corner of the fairgrounds in the spring of 1939. Probably it has been recently introduced.

For aid in the preparation of the above notes I am deeply grateful to Professor Milton Hopkins.

University of Oklahoma
Norman, Oklahoma

Rehder's Manual—Every student of our flora, whether a technical botanist, an amateur or a horticulturist, has awaited with keen anticipation the second edition of Rehder's Manual.[1] The thousands of questions which have arisen since the first edition have been carefully weighed and the newly proposed species, varieties, forms and horticultural products evaluated. To the horticulturist the work will be invaluable; to the botanist indispensable. The varieties and forms of botanists are properly so designated but, to save space and not to oppose too strongly the horticulturist's love of trinomials, the abbreviations "var." and "f." are omitted before the varietal or formal names but entered after the publishing author. Thus, under *Betula papyrifera* Marsh. we get **"B. p. cordifòlia** (Reg.) Fern., var.", **"B. p. mínor** (Tuckerm.) Wats. & Coult., var.", etc., while the commonly cultivated cut-leaved Birch appears as **"B. péndula dalecárlica** (L.) Schneid., f.", this being a forma, not a geographic variety. The bibliographic detail has been very carefully worked out and there is hope that in the not distant future we may have this great mass of essential bibliographic matter for ready reference. Without it the user who wants to check the original publications is largely helpless. This need of the bibliography is, naturally, one experienced only by the technical worker. It is greatly to be hoped that Professor Rehder will be able to supplement the present great work by the bibliographic explanation of it. The book, compact, with no padding, and directly to the point, contains abundant keys and telling descriptions and shows every evidence of being up-to-date, even to the inclusion of new varieties and forms published within the last half-year. Every active student of the flora of temperate North America needs it.—M. L. F.

[1] Alfred Rehder. Manual of Cultivated Trees and Shrubs Hardy in North America exclusive of the subtropical and warmer temperate Regions. Second Edition. xxx + 996 pp. New York. The Macmillan Company. 1940. $10.50.

Volume 42, no. 502, including pages 355–418 and plate 626, was issued 1 October, 1940.

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